ISBN 0-315-55680-3

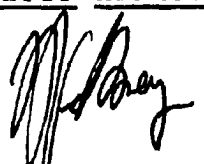
CONTRASTS IN GROWTH AND DEVELOPMENT:

NEW ENGLAND VERSUS ATLANTIC CANADA

A thesis submitted by Fred Morley in partial fulfillment of the Requirements for Masters of Arts Degree in Atlantic Canada Studies at Saint Mary's University

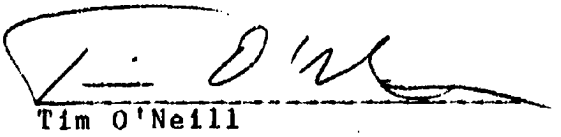
April 1988

THESIS APPROVED BY:



Henry Veltmeyer
(Supervisor)

L. Gene Barrett
(Reader)



Tim O'Neill
(External Examiner)

TABLE OF CONTENTS

LIST OF TABLES

List of Figures

ABSTRACT

CONTRASTS IN GROWTH AND DEVELOPMENT:
NEW ENGLAND VERSUS ATLANTIC CANADA.
by J. Fred Morley, April 1988.

This work compares patterns of development and underdevelopment in New England and Atlantic Canada. Certain similarities in history and geography have invited speculation on the cause of very different growth paths observed. This thesis examines the notion that keys to rapid growth in one region can be identified and applied in a direct way to solve the problems of an underdeveloped economy in a different region.

The methodology used to examine the validity of this proposition involves a statistical comparison of the two regions, an extensive review of theories of development and the identification of those most consistent with the pattern of growth in New England. The New England economy is then analyzed in terms of certain growth factors within relevant theoretical parameters. This methodology allows for a review of the relevance of these theories and factors to the problems of Atlantic Canada. The findings point to the difficulty of attributing growth to one theory or one factor in isolation. Growth is best explained by recognizing that the various elements of growth are interdependent. In this sense, the New England economy is unique. Few direct policy applications exist for Atlantic Canada.

ACKNOWLEDGMENTS

I wish to thank a number of people who have provided assistance and guidance in the preparation of this thesis. I would like to thank Henry Veltmeyer, Tim O'Neill and Gene Barrett who read the earlier draft and offered many valuable comments and suggestions. In particular, I would like to thank Henry Veltmeyer who guided me through the entire process and showed considerable patience throughout

I would like to thank the Atlantic Provinces Economic Council, its President, Bob Stuart and its Senior Economist, Maurice Mandale. Special thanks to Bob Stuart for his unwavering encouragement.

Finally, I wish to thank my parents, whose steady support has been an inspiration, and my wife Denise

This thesis is dedicated to the memory of my father, Charles Morley.

CHAPTER I

INTRODUCTION

The Atlantic Provinces, by virtue of similar geography, population roots, and historic ties, are widely considered to be similar to New England. As a consequence, the recent turnaround of the New England economy, in contrast with the experience in Atlantic Canada, has invited analysis and speculation on the cause of the very different growth paths observed[1]. The notion that by identifying the keys to the rebirth of the New England economy that these can be applied, in a more or less direct way, to the Atlantic economy has become popular among policy makers and their bosses. This avenue of investigation has arisen in response to the distinct lack of success of a host of regional development policies, focusing more or less on Atlantic Canada, that have come and gone over the past thirty years[2].

The simple notion that growth and underdevelopment are different sides of the same coin is consistent with theories of international development in the developmental or modernistic mold. This paradigm in its simplest form states that by looking at the observable differences between industrialized countries or regions and their underdeveloped counterparts, growth factors can be isolated and applied directly to an underdeveloped economy, with positive results. Experience in the Atlantic provinces and elsewhere

demonstrates that growth and underdevelopment can not be described in two dimensions. However, by expanding our theoretical base we see that undervelopment can be described as a process as well as a state of the economy.

This study will attempt to demonstrate that growth in New England can be explained by a number of identifiable factors within a standard theoretical framework. This paper will also attempt to demonstrate that growth is a complex process, that factors contributing to growth can not be dealt with in isolation, and that, at least in New England, rapid economic growth is the result of a variety of factors working together. This study will propose that no single theory of economic development adequately explains the growth process as it is observed in the real world. The review of the literature and relevant macro-data is also designed to test the growth process as observed in New England for generalities that may apply in Atlantic Canada. It is the general thesis of this study that the pattern of growth in a seemingly similar region, New England, does not offer a model of growth suitable to the problems of the Atlantic region. However, it is hoped that some lessons can be learned.

Problems of disparities between countries or regions have proven difficult to package neatly within the parameters of one theory or another. Theories, models and paradigms relating to regional growth and development span a broad spectrum of social science and are the subject of continuous debate, indeed conflict, among theorists. The

debate appears less rigorous among policy makers however. Policy makers pick and choose from various theoretical camps based on diverse criteria of what has worked in the past, sex appeal, bureaucratic priorities and, apparently, a belief that every once in a while it is time for a change. Policies that confront disparities have met with little success and indeed some theories of economic growth see bureaucracy as a big part of the problem.

The success of theory of course, is measured by how accurately it models a given economy or economic situation. The resurgence of the New England economy and the continuing disparity between the Atlantic economy and the rest of Canada are the topic of the day. The Atlantic economy is the primary topic of concern. The New England miracle is often promoted as a model for growth in Canada and, by some, as a solution to regional disparity. The policy prescriptions depend on the theoretical interpretation placed on these events. For example: Is the cause of slow growth in Atlantic Canada the result of a failure to adjust to the decline of traditional industries through emigration (the neo-classical view)'? Is slow growth the result of a deficiency of capital, technology, human capital, and so on (the developmental school)? Or is the process of undervelopment the direct result of growth elsewhere (the dependency school)? Newer theories have taken a more systemic approach[3], combining many of the existing

perspectives, while encompassing the policy process and results within its theoretical framework (neo-Schumpeterian approach).

Firstly this study will contrast basic economic indicators and historical trends in the two regions. Secondly this study will review various theories and paradigms of regional growth and development. Third it will provide a review of the factors which in the consensus of many have caused the resurgence in the New England economy[4]. The study will attempt to determine how the conditions specified by these factors fit various theoretical perspectives. In the same light the same factors will be reviewed as to their possible application in Atlantic Canada. The final section will review the ability of theories and factors relevant to growth in New England to describe problems slow growth and disparity in Atlantic Canada.

Footnotes.

1. William D. Shipman, Ed., Trade and Investment Across the Northeast Boundary: Quebec, the Atlantic Provinces and New England (Montreal:The Institute For Research On Public Policy, 1986).

2. Atlantic Provinces Economic Council, The Reoganization for Economic Development, Halifax: APEC, 1982.

3. Gerry Sweeney, Ed., Innovation Policies: An International Perspective, (London: Frances Pinter Publishers Ltd., 1985).

4. A significant body of literature exists which describes the factors behind the resurgence in the New England economy. Within this literature there exists a substantial consensus of the factors which have been most important to this process.

Wayne Ayers, "Economic Revitalization of New England and Prospects for the Eastern Provinces," Paper presented to Tri-Regional Seminar, (Boston, May 3, 1984).

James M. Howell, "The Economic Renaissance of New England," Economic Impact, Vol.51 (1985/3), pp. 16-23

John S. Hekman and John S. Strong, "The Evolution of New England Industry," New England Economic Review, (Mar./Apr., 1981), pp. 35-46.

Laura Roebuck, "Atlantic Canada and New England: A Rose Through World-coloured Glasses", Atlantic Business, 1987.

James M. Howell, "Summary of Remarks Before The International Experts Conference on Venture Capital and New Entrepreneurship," (Istanbul, May 21-22, 1987).

Robert E. Charm, "Is Dukakis Taking Credit Where Credit's Not Due?," New England Business, (July 6, 1987).

Daniel Okrent, "Boom!," New England Monthly, (Feb. 1987).

Lynn E. Browne, "High Technology and Regional Development," New England Economic Indicators, (Apr. 1984), pp. A3-A9.

Atlantic Provinces Economic Council, New England and Atlantic Canada: A Comparative Study (Halifax: APEC, Sept. 1985).

Ronald F. Ferguson and Helen F. Ladd, Economic Performance and Economic Policy In Massachusetts (Cambridge: John F. Kennedy School of Government, Harvard University, May 1986).

CHAPTER II

NEW ENGLAND AND ATLANTIC CANADA

Introduction

According to popular wisdom, the Atlantic region and New England have many common features such as common sea-faring traditions, similar climate (four seasons), family ties from past migrations in both directions, common geography and close proximity, quasi political links[1], and a still strong if somewhat fading fanaticism where the Boston Red Sox are concerned. This perception of similarity has invited analysis of the recent economic turnaround of New England, in contrast to a much different pattern in Atlantic Canada. It is hoped that through such analysis the factors that have contributed to the rejuvenation of the New England economy might be applied successfully just a little further to the Northeast.

It appears, however, that these two regions are not as similar as common wisdom would have it. The two regions are very dissimilar in size, population, industrial structure and labour force characteristics. Indicators of economic performance show a dramatic contrast in the economic growth of the two regions during the past decade. In 1975, the unemployment rate in New England was 10.4 percent, higher

than that of Atlantic Canada at 9.8 percent. By mid-1987, New England had dropped to 3.3 percent (2.5 percent in New Hampshire) while in the Atlantic Region the unemployment rate had risen to over 15 percent (over 20 percent in Newfoundland). During the period from 1969 to 1983, the average per capita income in New England rose from 105 percent to 111 percent of the national average. Over the same years, the average per capita income in Atlantic Canada rose from 67 percent to 71 percent of the national average[2].

Statistics, of course, do not tell the whole story. The political and social fabric of New England differs from that of Atlantic Canada. Two features often associated with New England are an abundance of risk takers and political clout in the nation's capital. The opposite is probably true of Atlantic Canada[3].

While New England as a whole is very different from Atlantic Canada, the most northerly three states, it has been maintained, are more easily compared. It is difficult to isolate the influence of these states from those to the south, however. This will be discussed later.

Policies derived from observation of New England's growth record are probably not useful if they are predicated on the popular notion that "what works there should work here". However there are lessons to be learned. It is useful to demonstrate what could work in revitalizing a region. It is also important to know what will not.

Demographics

The New England region consists of six states: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut while the Atlantic provinces include: Newfoundland and Labrador, Prince Edward Island, Nova Scotia, and New Brunswick. Together the two regions stretch across much of the seaboard of the Atlantic Northeast.

New England has an area of Almost 67,000 Square miles, representing 1.8 percent of the land area of the United States. Atlantic Canada, by comparison, has an area just over 208,000 square miles, representing 5.4 percent of Canada's land area. Labrador, the mai land portion of Newfoundland, represents over half of this area.

The population of New England was almost 12.4 million, 5.5 percent of the U.S. population in 1980, compared to Atlantic Canada's 2.2 million, representing 9.1 percent of the Canadian population in 1981. While New England is one of the smallest regions in the United States in terms of population, it is also the smallest in terms of size. Population density is therefore high. Rhode Island, Massachusetts and Connecticut rank second, third and fourth respectively, in population per square mile, among the states of the Union. While the Atlantic region is more densely populated than Canada, the region's density is about one twentieth that of New England. Table 1 provides some basic statistics on geography and population of individual

Table 1
Area and Population
The Atlantic Provinces and New England
(1980-81)

	Area(1) sq.mi.	Population(2) (000)	Population per sq.mi.
Newfoundland: Island	43,359	562	3.6
Labrador	112,825		
Prince Edward Island	2,184	121	55.4
Nova Scotia	21,425	838	39.1
New Brunswick	28,354	689	24.3
Atlantic Provinces	208,147	2,210	10.6
Canada	3,831,012	24,343	6.4
Atlantic Provinces as a % of Canada	5.4%	9.1%	
Maine	33,215	1,125	33.9
New Hampshire	9,304	921	99.0
Vermont	9,609	511	53.2
Massachusetts	8,257	5,737	694.8
Rhode Island	1,214	947	780.1
Connecticut	5,009	3,108	620.5
New England	66,608	12,348	185.4
United States	3,618,467	226,505	62.6
New England as a % of the United States	1.8%	5.5%	

1) Includes fresh water areas.

2) Canadian population 1981, U.S. population 1980.

Source: Statistics Canada; U.S. Bureau of the Census.

states and provinces. (More expensive detail on a state by state and province by province basis is found in Appendix A).

History

The economic histories of New England and Atlantic Canada have similar colonial roots revolving about similar resource bases. Political and economic influences of the previous century set them on much different courses as they moved into the twentieth century.

The important industries in New England of the nineteenth century had their origins in the craft industries of colonial times[4]. Small mills producing tools, metal products, furniture, and textiles were spread throughout the region. Skills in machine making, metal working and wood working were without equal in the United States. Entrepreneurship and Yankee ingenuity could almost be considered cultural features of the region. This provided the industrial base for the rapid growth of the nineteenth century.

Investment capital was available from merchants involved in overseas trade. Entrepreneurs, many of whom had cut their teeth in the risky environment of trading, were also in abundance. Starting from this solid base New England industry grew through inter-industry linkages, industry spinning off industry and so on, while benefiting

from the agglomeration effects of proximity to markets, related industries, and trained workers. The success in New England of translating merchant capital to industrial capital is in sharp contrast to the theories of development promoted by some[5].

Towards the end of the nineteenth century, New England and the United States as a whole came upon hard times. Over-capacity in industry, stimulated an unprecedented period of consolidation of industrial control. From 1886 to 1905 the size of the largest hundred firms in the nation quadrupled[6]. The traditional industries of the region, already hurt by the lure of a less militant and less class-conscious workforce in the Deep South, suffered. As traditional sectors declined, the development of a high technology base was already well established. In 1923, the electrical machinery industry in Massachusetts was already the third largest employer with 26,000 workers and the Massachusetts Institute of Technology (MIT) had already spun-off firms like Raytheon and EG&G[7].

Atlantic Canada had much the same economic roots. After prosperous years of trading and resource exploitation, the region's business people turned to more industrial pursuits with the passing of the era of "wooden ships and iron men". By the end of the 1880's the region was well established, and in some cases national leaders, in industries such as sugar refining, textiles, glass making, rope and cordage manufacturing, candy making, iron and steel, and so on[8].

This Industrial base did not last. By 1920, much that had grown up between 1880 and 1914 had disappeared. Colin D. Howell[9] points to three main reasons for this 'deindustrialization': the nation-wide consolidation of industry, the lack of access to capital by local entrepreneurs, and the demise of a regionally oriented preferential freight rate structure.

The National Policy of 1876, which erected a Canadian tariff in response to American actions, served to stimulate growth in the Atlantic region and across Canada[10]. It also encouraged a degree of overcapitalization and over-capacity, which led to wholesale dumping of cheap central Canadian goods on Atlantic markets. Consolidation and outright closure of many firms in the region was the inevitable result.

Consolidation was also evident among financial institutions[11]. Banks that had their roots in the region began to look increasingly outward, both in terms of loan-making and expansion. Significant disparities existed between deposits and loans made in the region. Eventually the head offices of the surviving few moved[12].

The elimination of preferential freight rates for goods heading east, early in this century, hurt the competitiveness of Atlantic industry in central markets. Preferential rates were put in place, under the terms of Confederation[13], to compensate for the diversion of trade from its natural and historic north-south orientation.

It is interesting to note that three factors which contributed to New England's emergence as an industrial power - an industrial base, access to capital, and access to markets - existed for a short while in Atlantic Canada. Their disappearance in Atlantic Canada, for mostly exogenous reasons, no doubt accounts for some of the differences between the two regions today.

Industrial Structure

The industrial structures of the two regions are quite dissimilar, despite factors such as a "common sea faring tradition". Broad differences also exist from province to province and state to state. In reference to Atlantic Canada, Harris and Warkentin comment:

> This is a very complex region. It has no unifying configuration of physical features, and even the surrounding sea provides a matrix rather than a focus. There is no centralization of economic activity or function, no rich heartland. If there is any unity, it is a unity of mutual problems arising from the attempt to wrest from modest resources a standard of living roughly equivalent to that of the rest of Canada and the United States[14].

An August 1987 supplement to the Economist comments in a similar vein on New England:

> The economies of the six New England states are in many ways different. Connecticut has big companies doing big things: Submarines, jet engines, machine tools, insurance. Massachusetts has small companies doing small things: computer software venture capital. Rhode Island has both extremes: jewels and submarines, stately Newport and grim Pawtucket. In Maine, they live off the land: paper, leather lobsters, tourists. Vermont and New Hampshire are twins that try to be as different as they can. Vermont is broader at its rural north; it makes cheese and maple syrup, and bans billboards. Granite New Hampshire is broader at its urban south and teems with small business and shopping malls[15].

Despite obvious differences within each of these regions There seem to be enough similarities that the term 'region' sticks.

The service sector is the most important component of the economies of both regions, a common feature of all post-industrial societies. Resource-based manufacturing accounts for between 60 percent and 7C percent of all manufactured Employment in Atlantic Canada[16]. In New England, by contrast only about 10 percent of manufacturing is resource based[17]. New England has a weak resource base, while the Atlantic region remains very dependent on its primary industries. (Details of the Contribution of specific industries to the Gross Domestic Product of each province and state and country are found in Appendix B).

New England's service sector is smaller and slower growing than for the United States as a whole. The only exception is in the area of finance, insurance and real estate which accounted for 15.8 percent of the gross product of New England compared to 14.6 percent for the U.S.[18]. In contrast, New England's manufacturing sector is considerably larger than the nation's. In Atlantic Canada the opposite scenario holds. The dominance of the service sector in Atlantic Canada reflects both dependence on government and the simple fact that the manufacturing sector is comparatively small.

The industrial structures of the Atlantic region and New England are very different, reflecting both historic and recent developments. Only by isolating the three more Northerly states of the New England region can some parallels be drawn. The validity of this approach will be discussed in a later section.

Regional Growth Patterns

Many indicators can be used to measure growth and economic progress. For the purpose of this study, four are particularly useful: population, employment, unemployment and earned income.

New England and Atlantic Canada have been experiencing a decline in their share of respective national populations for many years. This decline has been relatively constant

over the past thirty years, as shown in Table 2, and is partly a result of emigration to other regions of Canada and the United States.

Outmigration in New England can be related to serious economic difficulties in the late 1960's and early 1970's. Between 1968 and 1975, 250,000 jobs disappeared from the region's manufacturing sector. Many of the region's traditional industrial plants specializing in textiles, leather, and so on moved to areas where labour was cheaper, often to the South. In many cases workers followed. This pattern, combined with very low birth rates in the New England states make it the slowest growing region in the United States[19]. Slow growth is also evident in Atlantic Canada. Interprovincial migration, mostly to Ontario, has kept the population growth in the region growing slowly, and in some cases declining[20].

Table 2
Growth of Population
Atlantic Provinces and New England
(1950/51 - 1980/81)
(000)

	1951	1961	1971	1981
Newfoundland:	361	458	522	562
Prince Edward Island	98	105	112	121
Nova Scotia	643	738	789	838
New Brunswick	516	598	635	689
Atlantic Provinces	1,618	1,898	2,057	2,210
Canada	14,009	18,238	21,568	24,343
Atlantic Provinces as a % of Canada	11.6	10.4	9.5	9.1
Maine	914	969	994	1,125
New Hampshire	533	607	738	921
Vermont	378	390	445	511
Massachusetts	4,691	5,149	5,689	5,737
Rhode Island	792	859	949	947
Connecticut	2,007	2,535	3,032	3,108
New England	9,314	10,509	11,847	12,348
United States	151,326	179,311	203,302	226,505
New England as a % of the United States	6.2	5.9	5.8	5.5

Source: Statistics Canada; U.S. Bureau of the Census.

There have been distinctly different growth patterns within New England in recent years. During the period 1969 to 1983, northern New England had much higher growth in population than the three states to the south. This trend is demonstrated in Table 3. Migration patterns (reviewed in detail in appendix C) show a pattern of migration from the southern part of the region to the north. Projections show that New Hampshire will grow much faster than the regional or national average from 1980 to 2000[21].

Table 4 shows long-term and short-term national and regional employment growth rates. During the period 1969 to 1983, Canada outperformed the United States, New England, and the Atlantic region. The Atlantic Region, while below the Canadian average, bettered the New England rate of job creation. New England fell behind the U.S. average during the long term time frame, but has performed better in recent years. Northern New England's record of job creation was the best measured.

New England has outperformed both Canada and the United States in recent years. Atlantic Canada has continued to perform badly in this regard. Labour force growth has in fact been much more rapid than job creation in the Atlantic region leading to dramatic increases in unemployment rates[22]. Atlantic Canada's continuing high unemployment rate reflects dependence on resource-based activities and continuing venerability to business cycle fluctuation. Some economic theorists[23] would maintain that higher unemployment rates also reflect a lack of

Table 3

Population Growth
Atlantic Provinces and New England
(1969/83 and 1979/83)
(total percent increase)

	1969/83	1979/83
Canada	18.5	4.8
Atlantic Provinces	11.8	2.2
United States	16.2	4.2
New England	3.4	1.2
Northern New England	22.2	3.4

Source: Statistics Canada; U.S. Bureau of the Census.

Table 4

Employment Growth
Atlantic Provinces and New England
(1969/83 and 1979/83)
(total percent increase)

	1969/83	1979/83
Canada	37	3.3
Atlantic Provinces	30	2.5
United States	28	0.4
New England	23	3.4
Northern New England	41	4.9

Source: Statistics Canada; U.S. Bureau of the Census.

adjustment in the Atlantic region due to the inhibiting influence of a variety of federal transfers such as unemployment insurance and government to government payments. Others[24] would maintain that the unemployed represent a pool to be drawn upon when the dominant regions of the country have labour shortages.

The opposite is true of New England. Employment growth has outstripped labour force growth, leading to extremely low unemployment rates despite the highest participation rates in the United States. The increased pace of employment growth during the 1980's in New England reflects the winding down of the rationalization and adjustment in the manufacturing sector, and rapid growth in new high technology manufacturing along with steady expansion in the non-government portion of the service sector.

Table 6 shows that over the period 1969 to 1983, earned income per person in Atlantic Canada increased at a rate slightly more than the Canadian average. In recent years, however, this pace has slowed. In 1983 per capita earned income in the Atlantic provinces was still just over 70 percent of the national level.

By contrast, during both the long and short-term periods, incomes in New England continue to grow more rapidly than the U.S. average despite starting from an already impressive base[25]. Reasons for better incomes in New England are difficult to trace. Theories of regional science would attribute growth to early success at building

Table 5

Unemployment Rates
Atlantic Provinces and New England
(1975/1979/1983)
(percent increase)

	1969	1979	1983
Canada	6.9	7.4	11.9
Atlantic Provinces	9.8	11.7	15.0
United States	8.5	5.8	9.6
New England	10.4	5.5	6.9
Northern New England	9.7	5.3	7.3

Source: Statistics Canada; U.S. Bureau of the Census.

Table 6

Earned Income Per Person
And Growth Rates
Atlantic Provinces and New England
(1969-1983)

	Percent of National Levels		Annual Growth Rates (percent)	
	1969	1983	1969-83	1979-83
Canada	100.0	100.0	10.5	9.2
Atlantic Provinces	66.9	70.7	11.0	9.0
U.S.A.	100.0	100.0	7.6	5.9
New England	104.5	110.8	8.0	8.6
Northern New England	84.0	88.3	7.9	8.1

Source: Statistics Canada; U.S. Bureau of the Census.

a commercial and manufacturing base and significant agglomeration economies, including close proximity to markets. More recently growth has been related to innovation in the manufacturing sector and related service sector employment.

Northern New England

There is a popular view that northern New England is particularly similar to Atlantic Canada[26]. While this may be true at some levels, many features of the two regions are quite different. In addition to the obvious political differences, there is a sharp contrast in recent economic performance.

The population of the three northern states, approximately 2.5 million, is similar to that of Atlantic Canada. Population densities are also comparable. Income per person in Maine and Vermont are below the U.S. average, although not to the extent that those of Atlantic Canada lag the Canadian average. In economic terms, northern New England is more resource based, although it is not as dependent on resources as Atlantic Canada.

Differences between the two regions are often stark. While New England as a whole has grown faster than the rest of the United States, Canada, and the Atlantic region, northern New England has performed even better. Northern

New England has exceeded the rest of New England's performance in employment growth while experiencing a greater population growth. The top three states have reduced disparities in income per person and are now at about 90 percent of the U.S. level. Improvements in Atlantic Canada have been much more limited.

Several factors favour Northern New England. The area is close to the most heavily populated part of both Canada and the United States. New Hampshire, in particular, has benefited from the 'spill over' effect of bordering on Massachusetts, the most dynamic of the New England states. This spill over seems to relate to quality of life as much as business concerns such as tax advantages and industrial infrastructure

Manufacturing employment in New England as a proportion of total employment is about the same in both areas of the region, about 26 percent in mid-1987[27]. Manufacturing employment in Atlantic Canada's was about 13 percent around the same time[28]. While the northern three states have been more resource dependent than the New England Average, they also have a good mix of high technology industries.

Northern New England states have lower corporate taxes than their southern counterparts, although the general tax burden (corporate, personal and sales taxes) is comparable or higher than many other states in the U.S. These relationships are shown in table 7. Low personal tax rates in New Hampshire, together with its proximity to

Massachusetts, is a big factor in its growth[29]. Lower taxes may be a factor in relocation of firms and individuals within New England.

There is little advantage in limiting this analysis to a comparison of the Atlantic region to the three northern New England states. Such an analysis would tend to minimize the substantial impact the other three states have on the region as a whole.

Conclusion

Even a cursory overview points to significant differences between New England and the Atlantic provinces. Larger population and population densities together with very different industrial structures do not make for a solid base for comparison of growth patterns. The northern New England states, while more similar to their Maritime neighbours, can not be treated in isolation from their prosperous relatives to the south.

Some similarity in historical development is evident. However while traditional sectors of the New England economy were fading, other sectors, principally the high technology

Table 7

New England State Business Tax Burdens
(percent of net business income going to taxes)
(1977)

State	Tax Burden	U.S. Rank
Massachusetts	11.2	4
Rhode Island	11.0	5
Connecticut	10.7	6
Vermont	9.8	10
New Hampshire	9.4	11
Maine	9.1	13

Source: New England Council Inc.

sector, were growing rapidly. While New England has had its ups and downs it has never been considered a peripheral economy. The Atlantic region on the other hand deindustrialized to a degree in the early 1900's, leaving an industrial structure based for the most part on indigenous resources or local markets.

While the two regions are obviously very different, attempts at comparisons persist. This situation is not unique. Delegations of politicians and policy makers from around the world have come to New England to draw lessons from the New England miracle. Most jurisdictions have a battery of "high tech" policies and programs in place. New Englanders, ranging from management consultants to presidential hopefuls, have fanned out across the U.S. and around the world to spread the word. The purpose of this discussion is to explore New England's growth in theoretical and empirical terms and determine if, in fact, comparisons can be made and lessons can be learned.

Footnotes

1. Conference of New England Governors and Eastern Canadian Premiers

2. The Federal Reserve Bank of Boston, Statistics Canada.

3. Atlantic Provinces Economic Council, New England and Atlantic Canada: A Comparative Study, (Halifax: APEC, Sept. 1985).

4. John S. Hekman and John S. Strong, "The Evolution of New England Industry," New England Economic Review, (Mar./Apr., 1981), pp. 35-46.

5. Tom Naylor, The History of Canadian Business 1867-1914, (Toronto, 1978), Chapter 3.

6. Ronald F. Ferguson and Helen F. Ladd, Economic Performance and Economic Policy In Massachusetts, (Cambridge: John F. Kennedy School of Government, Harvard University, May 1986).

7. Ronald F. Ferguson and Helen F. Ladd, Economic Performance and Economic Policy In Massachusetts, p. 13.

8. T.W. Acheson, " The National Policy and Industrialization of the Maritimes 1880 - 1910," Acadiensis (Autumn, 1972)

9. Colin D. Howell, "Historical Reflections on the Industrial Hope in the Maritimes," APEC/DRIE Strategy Session, March, 1986.

10. Colin D. Howell

11. Tom Naylor, The History of Canadian Business 1867-1914.

12. Tom Naylor, The History of Canadian Business 1867-1914.

13. Atlantic Provinces Economic Council, Atlantic Canada Today, (Halifax: APEC, 1987) p.8.

14. R.C. Harris and J. Warkentin, Canada Before Confederation: A Study in Historical Geography, (New York: Oxford University Press) p.169.

15. "A Survey of New England: A Concentration of Talent," The Economist, (Aug. 8, 1987) p.3.

16. "New England/Atlantic Provinces Economies," APEC Newsletter, Vol.24 No.2, (1980) p.2.

17. Ibid.

18. Federal Reserve Bank of Boston.

19. Katharine L. Bradbury, "Prospects for Growth in New England: The Labor Force," The New England Economic Review, (Sept./Oct., 1985) p.55.

20. The population of Newfoundland declined slightly in 1987.

21. Bradbury, "Prospects for Growth in New England: The Labor Force," p.53.

22. A good overview of labour force trends in Atlantic Canada is found in Atlantic Canada Today, (Halifax: APEC,1987), pp.157-174.

23. Tom Courchene, "Interprovincial Migration and Economic Adjustment," Canadian Journal of Economics, 3 (1970), p. 550-76.

24. Henry Veltmeyer, "A Central Issue in Dependency Theory", Canadian Review of Sociology and Anthropology, 17:3 (1980).

25. It should be noted that the differential between U.S. and Canadian growth rates is lessened when the difference in inflation rates is taken into account.

26. "New England/Atlantic Provinces Economies," APEC Newsletter, Vol.24 No.2, (1980) p.1.

27. U.S. Dept. of Commerce.

28. Statistics Canada.

29. E.M. McNertney, "The Effects of State and Local Taxation On The Location of Industrial Employment: A Theoretical and Empirical Inquiry," The New England Journal of Business and Economics, (Spring, 1980), pp.13-22.

CHAPTER III

THEORIES OF REGIONAL GROWTH AND DEVELOPMENT

Introduction

What is a Region?

A logical starting point is to define the meaning of a region in the sense it will be used in this dissertation. No clear cut definition is available, however. A region can be defined in theoretical, social, policy or spatial terms and meanings can change over time. International theories of growth, development and underdevelopment are often used with little adjustment to explain sub-national observations and expectations. Class analysis has been used from time to time to describe regional relationships.

The notion of a region is probably most dynamic when defined in policy terms[1]. Early Canadian regional development policies focussed on rural areas. Later, with the birth of the Department of Regional Economic Expansion(DREE), regional policy reflected disparities between the Atlantic region (including part of Quebec) and the rest of the country. As the application of regional policy expanded over the years the meaning of the term 'region' became blurred. Regional policy grew to encompass the whole country. What was once clearly definable as a regional policy had become a Canada-wide development policy. The term region became a word designed to calm

local sensibilities and policy applications became so broad that it included every part of the country from the Hogtown to Happy Valley.

Various authors have at some length defined concepts of regional development[2], community development[3], and local development[4]. For the purposes of this paper it is useful to set semantics aside and define the regions of concern as the Atlantic region of Canada and the New England region of the United States. This determination is largely one of convention, where adjacent political jurisdictions with some similarities, however tenuous, tend to be grouped together. With a spatial reference point established we next look to theoretical underpinnings of regional growth and development.

Regional Growth Theory

There have been three main influences on regional theory and policy[5]: neo-classical theory[6], Keynesian theory[7], and Marxist theory[8]. While none of these three can be accurately defined as a theory of regional growth as such, all have made vital contributions to the development

of various models. In a manner of speaking, these basic paradigms are the parentheses which bound the various theories that will be explored.

Neo-classical and Keynesian theory combined with some observations on the workings of underdeveloped economies form the underpinnings of most orthodox theories of regional growth. Most orthodox theories show an inherent belief in the primacy of the market in economic matters along with an occasional Keynesian predisposition towards government intervention in the economy.

A second category of models of regional disparity can be termed "non-traditional" and represent the application of a wide range of theory combined with broad application of historical observation and evidence. The influence of Keynesian thinking is quite strong among thinkers in this group. Neo-classical economics plays a lesser role. This is a rather diverse category with some models reflecting rather unique perception on regional problems.

The third theoretical grouping includes radical regional theories and reflects the dominant influence of Marxist theory combined with historical evidence on the nature of growth and underdevelopment. This particular category is the newest and perhaps the least developed of the three main streams. A dominant paradigm has yet to emerge from this third group and policy applications have been very limited as of yet.

These three streams, reflecting a variety of models of regional growth, have explained the process of growth and development with varying degrees of success over the years. The experience of the Atlantic region to date seems to suggest that policies, based to some extent on known paradigms, have been less than effective. It is not surprising that theories which leave something to be desired in their explanations of regional growth should give poor results when they form the basis of policy. One suspects that the solution to regional problems may still be locked within the maze of models and paradigms that have accumulated over the years. The right policy or the right combination of theoretical explanations have not yet been found in the case of Atlantic Canada. New England's success, on the other hand, can be explained by reference to a limited number of interdependent factors which are consistent with a range of theoretical perspectives. In the case of Atlantic Canada, regional growth theory is most apparent in various policy applications. A review of regional growth theory in the context of the "New England miracle" and a lack of success of regional policy in Atlantic Canada should prove valuable.

Theoretical Parameters

General Equilibrium

Neo-classical economics is characterized by a faith in

the market and its ability to distribute resources in society in an equitable and optimum fashion. In reference to a particular region this theory would highlight comparative advantages of some regions over others while attributing problems of high unemployment and so on to market imperfections. In fact the absence of equilibrium state "full employment" is often attributed to barriers to the proper functioning of the market.

The neo-classical approach is not a theory of regional disparities and regional growth as such:

> The neo-classical approach maintains that several standard methods of economic analysis can be used to advantage in discussing regional problems. It emphasizes the importance of flexibility in wages and prices, the mobility of labour and capital, and the capacity of market forces to solve regional problems when they are allowed to work unhindered[9].

While neo-classical theory appears to have a considerable influence on most orthodox models, there is no evidence of a whole-hearted application of pure neo-classical principles. Policy has been tempered with Keynesian and political concerns for the most part.

The currency of neo-classical theory among Canadian policy makers has been quite high at times over the last thirty years. In the years before 1960 laissez faire economics played an important role. As commitment to the regional development policies of the early 1960's waned, The Economic Council of Canada in its fifth Annual Review[10]

embraced the popular American version of the neo-classical paradigm[11]. This version emphasized the role of unrestricted markets, private enterprise and free trade[12].

More recently, with the demise of DREE and the uncertainty over the effectiveness of regional development policies, neo-classical theory has again gained popularity. One author writing in this vein has been Tom Courchene[13] who sees most federal transfers causing not only market disruption but debilitating dependence in recipient regions[14].

Neo-classical theory is accused of a variety of weaknesses including limitations in its dealings with social relationships and spatial factors. The main limitation of the model are problems in dealing with technical change[15]. This is an important consideration in dealing with the New England Economy. Technology is explained in theory through the use of a neo-classical production function, Y=F(K,L,R,t), where output is a function of capital, labour, land, and "t" represents a trend factor representing constant technological improvement[16]. Unfortunately, empirical testing shows that much of growth must be attributed to this mysterious "t" term Attempts to define it more closely within the limits of theory have been largely unsuccessful.

> Following upon the discovery that there was a large "residual" involved in neo-classical explanations of economic growth, and the identification of that residual with technical change, economists undertook a

> considerable amount of research aimed toward pinning down what technical change actually is... But what we now know about technical change should not be comforting to an economist who has been holding the hypothesis that technical change can be easily accommodated within an augmented neo-classical model. Nor can the problem here be brushed aside as involving a phenomenon that is small relative to those that are well handled by the theory; rather it relates to a phenomenon [that is, technical change] that all analysts (or virtually all) acknowledge as the central one in economic growth. The tail now wags the dog and the dog does not fit the tail very well. The neo-classical approach to growth theory has taken us down a smooth road to a dead end[17].

Despite its clear limitations neo-classical theory has a dominant influence among today's policy makers. This is clear from the growing focus on the national as opposed to local issues and a growing impatience among policy makers with things regional. However, in some circles and among some authors[18] the inability of the model to explain changing technology, perhaps the dominant force in recent growth, has led to a search for alternatives.

Keynes

In contrast to the neo-classical brand, Keynesian theory maintains that the market does not guarantee full employment. Economies are subject to cyclical downturns and government intervention to stimulate aggregate demand is often necessary to reach full employment[19]. Indeed, Keynesian theory recognizes that demand can be geographically dispersed and thus differences in unemployment rates among regions can exist[20].

Keynesian theory is imperfect in regard to its concepts of region, however. It does not recognize certain important spatial aspects of a regional economy (distance to markets). Keynesian policies useful at the national level (exchange rate manipulation) are not practical for regions within a country.

Keynesian economists Roy Harrod and Evsey Domar saw savings and investment as the central forces behind growth[21]. Lack of growth was therefore related to a shortage of capital. Others, such as Kaldor, arrived at the same conclusion via a different route[22]. Kaldor viewed money supply as endogenous at national and sub-national levels. Banks are prepared to supply credit indefinitely at set interest rates. Level of investment depends on the quality and number of investment opportunities. Dependency theorists in particular have taken exception to the assumption of equal treatment of regions by banks.

Despite these drawbacks, Keynesian theory has had a major impact since World War II. Most recently, Reaganomics has stimulated aggregate demand through tax cuts and increased government spending all under the guise of restraint in government. New England in particular has benefited from this policy in the form of a dramatic upswing in military procurement since 1980.

For a good part of the post-war period, economic policy makers in Canada were content to guide the national economy solely with the aid of Keynesian stabilization policy and to leave regions to the workings of regional comparative advantage and structural adjustments to the free market[23]. Little thought was given to the regional impacts of these expansionary national policies. This trickle down philosophy was clear from the time of the 1945 White Paper on Employment and Income[24], the first attempt in Canada to formulate policy from Keynesian theory. One critical element was missing however:

> "This was the conception common to Keynes' thought that high levels of income and employment in the national economy could not be relied upon to solve the problems of economically retarded regions, that demand management policies should be supplemented by special policies to promote regional balance in employment and income."[25].

The trickle down approach was long considered the main source of regional growth. It was not until the regional science model of economic growth became popular that this more subtle interpretation of Keynes found its way into policy.

Marx

The Marxist approach is essentially a historical one. It focuses on determining how an economy works by interpreting observable social and economic interaction. The workings of the economy are explained in terms of productive relationships, specifically the interaction of "forces of production"[26]. The forces of production include such things as machines, raw materials and workers, while the relations of production are relations between human beings. The two together are a mode of production. Forces of production are constantly changing (new technology etc.) while relations of production are constantly adjusting to changing 'forces'. With winners and losers in this adjustment process it is inevitable, in a Marxist analysis, that class conflict and disparities in accumulated wealth and power develop.

This natural state of conflict and exploitation between rich and poor found applications in the international literature on the cause of underdevelopment in Latin America. This model of economic development (more aptly termed a model of underdevelopment) focuses on the exploitative relationship between highly developed capitalist countries and less developed ones. Monopolistic powers are deployed in a fashion such that the resources of the periphery are drawn from it for the use of the core, with little or no benefit to the supplying area. In effect the periphery is exploited in a fashion that leads to underdevelopment. A variety of authors have attempted to adapt this international theory to regional problems (Veltmeyer, Sacouman, Archibald). Ralph Matthews, feels that Marxist analysis "provides one of the most comprehensive and systematic analyses of the nature and causes of regional differences available in economic literature" [27]. As evidence of this capability, Matthews states that "regional divisions and disparities are inseparable from the class divisions within a society and are explainable in class terms"[28].

Regional disparities in growth are, in this view, a natural and endemic characteristic of capitalism and can be directly related to the goal of accumulating wealth. Wealth is distributed unequally among classes. The role of a peripheral region is as a supplier of resources, capital and labour. High unemployment in the exploited region represents a large reserve army of labour that can be drawn

upon at low cost when needed in the dominant area. A Marxist perspective on regional disparities would also focus on the presence of a regional government stripped of funds through infrastructure commitments. These funds could have been used to stimulate indigenous growth.

The usefulness of Marxist analysis in explanation of regional disparities is in its understanding of power relationships (the dominance of the center over the periphery) and its integration of economic considerations with social ones through an exploration of class structure. The main weakness of Marxist analysis is in its lack of focus on spatial relations. It shares this fault with the other streams of economic analysis. In addition, conflict exists within the radical camp between those of the dependency school who have rejected growth as a possibility despite empirical evidence to the contrary, and more traditional Marxist views that capitalist growth must take place and is one stage in the drive to communism. Attempts to rationalize this conflict have bred a whole range of neo-Marxian paradigms.

One of the main attempts to rationalize this conflict is the notion of dependent capitalist development, popularized by Cardoso[29], that growth and development could take place in and underdeveloped country(region). Veltmeyer sees the multi national corporation as the main instrument of this growth, which remains ultimately exploitive and dependent on outside expertise and technology[30].

Policy prescriptions arising out of Marxist analysis have gone untested in this country. However in a Marxist analysis, underdevelopment and disparities are a natural process only to be overcome by class struggle and revolution. Obviously this stream of thought does not lend itself to economic tinkering.

Orthodox Explanations of Regional Growth

Introduction

The spectrum of economic development/underdevelopment theory does not lend itself naturally to regional formulations. Applications of broad theory to regional problems have tended to view the regions as a smaller version of the greater whole. This may explain to some extent the lack of success at applying broad theory to regional problems.

Regional development theories draw inspiration from many sources. Some writers trace regional perspectives in development as far back as late nineteenth century anarchist theorists[31]. A uniquely Canadian perspective on development was provided by a series of "staples theorists" including Innis[32] and MacKintosh [33].

The staples theory likely contributed to North's development of the export base model of growth[34]. The dominant international paradigm of growth and development, the developmental or modernization approach, provides another perspective on regional growth and has had a major impact on regional policies[35]. Aspects of many of the above can be found in the so called regional science approach[36] which has been the backbone of regional policy, in Canada at least, since the early 1960's. A reinterpretation of existing theory along with some policy feedback has led to the development of the transfer dependency approach which is quickly becoming the dominant paradime at present. One view, the systemic approach, has grown from empirical investigations of the growth process rather than from the confines of existing theory.

Staples

The staples approach is an indigenous Canadian theory of economic growth and development centered around the work of Harold Innis [37]. Innis felt that the economic growth of a country or region was determined by the characteristics of its staple products; minerals, lumber, furs and so on. Under this theory, continued growth depends on the export of a succession of staple products. Shifts in prominence from one staple to another results in periods of crisis and

disruption. Under optimum conditions staple exports could eventually lead to more diversified activities (manufacturing and services) through 'spread effects'.

A more optimistic and highly influential version of the Staples theory was developed by W.A. MacKintosh. MacKintosh argued that demand for resource generated economic growth through the development of economic linkages. These were of three types: backward linkages, or the production of goods for staple industries; forward linkages, or the processing of resources; and final demand linkages, or the production of consumer goods required by workers in the staple industry. MacKintosh offered no explanation however of underdeveloped economies where linkages failed to develop, as was the case in the Atlantic Region and, in a broader sense, for Canada as a whole.

A rediscovery and reinterpretation of Innis' work by certain economists working in the 1960's (Watkins[38] for example) shed some light on the lack of development of economic linkages observed in Canada. Linkages failed to develop mainly because of the dominance of the imperial core, the United States or Britain, which set the terms of trade and captured most of the economic rent associated with staple development[39]. In other words, the core area draws off not only resources for further processing but most of the profits as well. Under this scenario Innis observed that governments were forced to commit funds to

infrastructure construction for the support of staple exports with a significant cost to the country in terms of misdirected funds.

Innis' contribution can be summarized:

> Canadian development theory, in the hands of Innis, emphasized factors such as discrepancies in power between metropolis and hinterland, the consequences of external control, the problem of leakages of capital, institutional blockages to economic diversification, and the frequent occurrence of disequilibrium and crisis, ideas which did not gain currency in international circles until the 1970's[40].

Direct policy application of staples theory have been limited. Policy, where it has developed, has reflected the split in interpretation of the staples thesis. Policies reflecting the earlier interpretation of Innis by authors such as MacKintosh focusing on the development of economic linkages through the subsidization of manufacturing industries have been popular, although unsuccessful, in Atlantic Canada. On the other hand, strong inter industry linkages have developed in New England with no overt subsidization. However, it has been maintained by some that U.S. subsidies to industry are present but less easily identified[[40].

Export/Economic Base Approach

The staple theory, at least MacKintosh's version of it, seems to have been a significant influence in the development of an export based theory of growth by an American Economist, Douglas North[41]. North saw external demand for staples generating a domestic surplus which would create demand for import substitution through a natural process. North reflected MacKintosh's optimism in the belief that linkages to the manufacturing and service sectors would develop as a matter of course.

The Developmental Approach/Modernization Theory

This approach has had its greatest application in the international setting but certain aspects of it have been influential in the context of regional growth. This theory has its origins in the writings of Lewis[42] and Rostow[43] who saw both development and underdevelopment merely as stages through which all economies passed. This notion has its equivalent in orthodox Marxism. Rostow's "stages theory" included five stages: the traditional or subsistence society, the preconditions or staples stage, the take off or

embryonic manufacturing stage, the drive to maturity stage and finally an age of mass consumption which was dominated by service industries[44].

In this scenario underdevelopment was caused by the lack of certain ingredients necessary to move on to the next stage. Key among these were; lack of accumulation of the physical capital required for investment, the lack of social capital or infrastructure (schools, highways etc.) needed as a base for economic growth, and lack of the human capital (skills and training) needed to run an economy at high levels of productivity. In this sense, this view is consistent with other orthodox paradigms which see underdevelopment as simply a lack of growth due to the absence of one or more of its key ingredients.

While the modernization doctrine has had a fair amount of application on an international and regional basis, the theory itself is flawed. The stages theory is not supported by empirical evidence. Stages are not as distinct, nor are they the same in every country. Underdeveloped countries tend to be regarded as a clean slate, when in reality they are often a mix of development and underdevelopment. There is little focus on transition mechanisms between stages. Insufficient attention is paid to resource endowment, economic history and competition from the outside world.

Despite these problems, the developmental approach has been used widely, mostly in the international context, but also in the regional development field. Regional policies focussing on infrastructure and education are grounded, at least in part, on this international paradime.

Regional Science Approach

Introduction

The regional science approach, rather than being a pure theory of economic development, is a combination of a variety of approaches. It melds many of the notions of neo-classical economics adjusted through observation and practice. Its primary focus is on the spatial dimension of economic growth (distance from markets, transportation costs, etc.) combined with an appreciation of the influence economic structure has on the locational decision and the ultimate success of firms. Regional science goes beyond the pure neo-classical approach which gives little weight to spatial and structural factors[45].

Walter Isard, in the introduction to his landmark volume "Introduction to Regional Science", lists thirteen definitions of regional science. It is useful to restate a few:

-Regional science is the comprehensive study of a meaningful region or system of regions in all its key economic, political, social, cultural, and psychological aspects.

-Regional science aims to identify and expose simple, basic principles of spatial organization -- principles that govern equilibrium and organizational structure and relate to efficiency, equity, and social welfare.

-Regional science is the study of the joint interaction of social, political, and economic behaving units and the physical environment within meaningful regions and systems of regions[46].

Regional science encompasses a number of paradigms that explain growth. It is useful, in a review such as this, to touch on some of them here.

Central Place

This t[illegible]ry of regional growth was first proposed by Losch[47] in the early 1960's. It recognizes that certain economies are gained from location in a central area. Where consumer demand is evenly spread, overlapping marketing areas minimize transportation costs thus improve competition of firms located in that central area. Walter Isard[48], probably the dominant figure in regional science, built on Losch in his detailed explanation of location decisions of firms.

Growth Poles

Perroux[49] pioneered the orthodox notion of polarized development. This French economist noted that growth does not occur naturally but at poles of growth with variable intensity. The key ingredient in this process are propulsive or motor industries which pull other industries along through a variety of linkages. Perroux's observations on the nature of growth came with built-in policy implications. Perroux felt that if the mechanisms of regional growth could be understood it could be copied and applied to depressed areas.

Agglomeration Economies

The notion of agglomeration and deglomeration economies relates to the fact that there are certain economies and diseconomies related to regional concentrations of population and/or industry. Isard divides these into three separate categories, scale economies, localization economies, and urbanization economies.

Scale economies refer to the notion of increasing returns to scale. The larger a facility the more broadly it is able to spread its fixed cost among units of production. Large scale production requires a large market (a large population nearby). Recent technological advances in the area of automated manufacturing have made shorter and more diverse production runs increasingly viable. A plant no longer has to be retooled, just reprogrammed. This advance has led to some rethinking of traditional notions of scale.

Localization economies relate to the economies derived by a firm which locates in the middle of an industrial complex, close to intermediate buyers, suppliers, repair facilities, and so on. This is why firms tend to locate in industrial parks and why new high tech computer firms in New England tend to locate in close proximity to established New England high tech firms. Route 126 was not, it appears, an accident.

Urbanization economies take the principles of localization economies a step further. The existence of an industrial urban complex means not only industrial linkage but guarantees pools of trained labour and the necessary management design and research and development skills are more likely to exist. Again this pattern is most evident in New England.

There are also diseconomies associated with increasing size. Traffic congestion, high crime rates, and a general social anxiety are the price of growth and must be weighed against the benefits of agglomeration economies. Changing

communications technology combined with the growing importance of the service sector, have seen individual choices about quality of life increasingly overwhelm the agglomeration benefits of a central or an urban location.

Transfer Dependency

While neo-classical theory has been a major influence on almost all national and regional policies in Canada and the United States, its preoccupation with a free functioning market has often been tempered by other theoretical and various political concerns. Explanations of regional problems based neo-classical economics continue to have a major influence.

One uniquely Canadian interpretation of this perspective is the notion of "transfer dependency" popularized by Courchene[50]. In this model, government regulatory programs and social assistance policies as applied to depressed areas prevent markets from working and thus perpetuate and even worsen regional disparity.

Under this scenario federal transfers of various kinds make the provinces more dependent, a dependence which manifests itself not only at the level of government but also culturally and socially. The end result is widespread economic dependence and a general feeling of hopelessness among dependent individuals. It is interesting to note that

ultimate dependence on regional programs is also the end result of the less orthodox cumulative causation process which will be discussed later[51].

Transfer dependency is in sharp contrast to the neo-classical perspective outlined by the Economic Council of Canada in "Living Together"[52] which saw the largest transfer programs, equalization and so on, as a means to use the market system to solve regional problems by first eliminating more obvious inequalities. Courchene's version of sees policies such as equalization as part of the problem, not as part of the solution.

Policy options evolving from the transfer dependency approach involve the removal of social support mechanisms so that natural adjustment mechanisms (the market system) can be allowed to function. In this scenario high minimum wages, generous unemployment insurance and other support mechanisms are the enemies of regional adjustment. These and like sentiments seem to be a guiding force of recent policy trends in Canada. A perceived need to reduce deficits have led governments to look seriously at the convenient notion of transfer dependency. In this respect, New England can be pointed to as an area where barriers to the proper functioning of the market are few and adjustment is an important part of resurgent growth.

Non-traditional Growth Theories

Cumulative Causation

This conception regional differences was espoused by G. Myrdal[53] in the late 1950's. This model is opposed to the neo-classical notion that regional problems can be solved if the market is allowed to move towards its natural equilibrium.

In an economy governed by market forces, if enough people leave an area, productivity there will increase. The cumulative causation model on the other hand sees emigration as a primary cause of decline. The most highly prized skills of a depressed area are the most mobile. Out-migration causes markets to shrink and fixed costs for government, health care and so on, to weigh heavily on those remaining.

Policies reflecting aspects of this model were popular in the mid to late 1960's in Canada. The Atlantic Provinces Economic Council was a strong advocate of various policies, manufacturing subsidies and so on, that had the potential of stemming the tide of migration during this period.

New England, suffering from a decline in traditional industries during the sixties and seventies, adopted no such policies. Emigration from the more populous New England states, is a primary reason for today's low unemployment rates. Despite this outflow, skills necessary for the high technology boom of the 1980's were available and cheap when needed. Here too, almost certainly, other factors were at play.

Polarized Development

Friedmann, in his General Theory of Polarized Development[54], like Myrdal, oversteps traditional orthodoxy. Unlike other regional scientists of the late 1960's, but surprisingly similar to Innis, he explains economic growth as a historical process with all its political and social complexities. The main difference from orthodox analysts of economic development however was his recognition of the possibility of the concentration of the benefits of economic growth in a central area at the expense of peripheral areas. Peripheral areas would tend to be exploited by the core until political alienation brought change, violent or otherwise.

It has been maintained by some that Friedmann's influence was less than it might have been because of the development of a competing and more radical version of the core-periphery thesis at the same time by A.G.Frank and others[55].

The core-periphery model could have easily inspired decentralization policies of the Canadian government of the 1970's. The same logic may apply to the policy of geographic targeting promoted by Massachusetts Governor Dukakis, beginning in the mid 1970's[56].

Left Nationalist Position

Innis' observations on the process of development in Canada were rediscovered and to some extent expanded by Watkins and others in the mid 1960's[57]. In Watkins' hands, Innis' work was shown to anticipate the core-periphery interpretation of Frank and Friedmann, all in a unique Canadian economic and political environment. Innis showed how staples production subordinated Canada to the interest of imperial nations which control the staples trade and the flow of capital. Governments meanwhile were forced to commit funds, which may have had better uses, for the construction of the infrastructure for staple export. Canada was thus caught up in what was termed "a staples trap" which prevented the development beyond a rudimentary economy. Where Canada did develop beyond resource processing, industries were generally branch plants established to circumvent the Canadian tariff and dependent on foreign owners for technology.

Watkins' policy solution involved reducing foreign control of staple industries, stemming the outflow of capital, and directing these funds to the development of indigenous manufacturing. These ideas likely influenced the formation of the Foreign Investment Revenue Agency in the 1970's and the National Energy Plan of 1980. Similar concerns with foreign control of industries have surfaced more recently in the United States[58].

Small Is Beautiful

An alternative approach to problems of underdevelopment was popularized, but by no means invented, by E.F. Schumacher in his 1974 volume[59]. In a viewpoint related to the developmental and modernists approaches of the 1960's, Schumacher attributes poverty in underdeveloped areas to non material factors such as deficiencies in education, organization and discipline[60]. In this scenario, development does not begin with the resource base but with people. Resources are likely to remain untapped and unproductive if deficiencies are not first corrected.

Policies for economic development in Schumacher's view must be an evolutionary process rather than an act of creation. The process must be one of building from the bottom up through education and training rather than from the top down through the establishment of large "green field" industries.

In this bottom up approach Schumacher identifies four aspects of development[61]:

-creating work where people live,

-fixed capital must be cheap and amenable to wide distribution,

-production methods must be simple

-products made from local materials

The main differences between this approach and others is a shift from concentration on goods and output to a concentration on people and jobs.

This particular model of development was quite popular in the mid-1970's both in Canada and the United States. Within Canada's regional development policy framework this new paradime offered a welcome change in focus from the type of development projects that lent themselves to spectacular failure, to a concentration on smaller more localized developments[62].

In the United States, community development corporations were the main outlet for this paradigm. In 1957-58, there were almost 2,000 CDC's in operation in the U.S.[63]. Massachusetts has one of the strongest commitments to CDC's in the United States, with substantial support in government, business and academic circles.

Schumpeterian Approach

Introduction

Schumpeter felt that the individual entrepreneur is the key to economic growth and development[64]. The role of the entrepreneur was innovation, the use of an invention or a new process in the creation of greater efficiency or a new product. The use of new technology by the entrepreneur was the key process in economic growth. While Schumpeter separated inventor and innovator, Rostow conceded that they could exist simultaneously in a given country[65]. Rostow felt that invention was no guarantee of innovation.

Schumpeter distinguished between the entrepreneur and the manager, whose role was one of routine decision making not innovation. The entrepreneur would eventually be supplanted by bureaucratized management isolated from the risks of decision making, not a healthy situation in Schumpeter's view.

> Since capitalist enterprise, by its very achievements, tends to automatize progress, we conclude that it tends to make itself superfluous -- to break to pieces under the pressure of its own success. The perfectly bureaucratized giant industrial unit not only ousts the small or medium-sized firm and expropriates its owners, but in the end it also ousts the entrepreneur and expropriates the bourgeoisie as a class which in the process stands to lose not only its income but also what is infinitely more important, its function[66].

It appears from this that the early stages of innovation are the most productive and according to some historians of entrepreneurship, the time when local or regional priorities are most keenly felt.

> In the early stages of development, entrepreneurs are community oriented -- aware, that is, only of their impact on local markets for labour and goods. Later they become conscious of their particular industry as a whole, and interested in its technical progress, their share of output, their standing[67].

Clearly the early years of the micro computer industry were times of rapid growth in New England. Much of this can be related directly to the processes of invention and innovation and the presence of entrepreneurship. A review of the comings and goings of industries in Atlantic Canada gives the feel that local entrepreneurs have the greatest commitment to the region[68]. A lack of entrepreneurial skills has been pointed to in various studies on the Atlantic region as the main cause of underdevelopment[69].

The Entrepreneurial Approach

This approach, which A.M. Sinclair has labelled the 'Schumpeter-Hagan Entrepreneurial Input Approach', promotes the idea that the key to economic growth is the development or importing of successful innovators[70]. In this model, the absence of successful entrepreneurs in a depressed region can not be attributed solely to the absence of comparative advantage or the market imperfections highlighted in the neo-classical approach.

Some, like Levine at the University of New Brunswick, have speculated that the environment in the Atlantic region, for cultural and other reasons, is opposed to change[71].

This he maintains is not a good breeding ground for entrepreneurs. New England, on the other hand, is, according to legend, the birthplace of Yankee ingenuity. This combined with a high level of research and development and invention, fodder for the innovator, would explain in part the region's recent success.

Neo-Schumpeterian Approach

The neo-Schumpeterian approach, according to Fransman, has arisen from a loss of faith in the descriptive and practical qualities of existing neo-classical and dependency theories[72]. This approach is concerned with the 'process' of economic change rather than the analysis of equilibrium states. While its major theme is the role of technical change in growth, the key to growth remains the entrepreneur. No distinction is made in relative value of public versus private sector innovation. It is an interdisciplinary approach recognizing interactions between all elements of society and interdependence of technology, economics, education, entrepreneurship, and politics[73].

Availability of capital, as in most other paradigms we have reviewed, is an important factor. In particular, the availability of venture capital or pre-venture capital is essential to successful innovation. Educational institutions play a role in development beyond their standard training and knowledge accumulating functions.

Universities must, within this paradigm, be a source of useful research and development, consulting services, and innovation. In short they must become part of the rapidly growing knowledge industry.

Technology is regarded as important, but as a tool of development not as an end in itself. Governments around the world have developed a rich and very similar battery of policies essentially designed to do the same thing, promote high technology industries, microelectronics, biotechnology and so on. All of the above are maturing industries. This approach makes the sensible observation that governments can not pick winners. They can guide innovation through contracting procedures, procurement, providing a nutrient information flow, and providing social infrastructure. Unfortunately governments' responce to the challenge of entrepreneurship has, at least in the Atlantic region, involved an array of programs administered by a variety of agencies which are often overlapping, counterproductive or overly complex. It would appear that if results are any measure, authorities in New England have done a better job.

Voluntaristic Development

This approach to regional development refers to the approach to regional problems developed in various works by Ralph Matthews[74]. Matthews recognizes the validity of a Marxist type of analysis but also highlights what he feels

are some clear limitations. Most dominant among these limitations is the manner in which the new Canadian political economy has tended to ignore the importance of traditional concerns such as the impact of social organization and culture on economic development[75]. It is interesting to note that the notion of technological culture, the mixing of culture and enterprise endemic to a particular area, is an important concept within the neo-Schumpeterian approach.

Matthews' approach departs from Canadian political economy in its focus on basic values and attitudes, and places a premium on the power of the individual to affect his or her own world. In this respect Matthews' approach rejects the Marxist notion that the individual is a captive of class.

The policy implications of this approach are likely similar to the Schumpeter view and consistent with the entrepreneurial mold. It does not appear that the currency of this approach has risen enough to warrant specific policy applications however. It does however provide a link between a variety of important and seemingly diverse modern theories.

Son of Dependency of Province Building Model

In a study on self-sufficiency and regional dependency, it has been argued that the Nova Scotia economy, and by implication the Atlantic economy, is "on the periphery of the periphery"[76]. Nova Scotia, in other words, is a branch plant of the Ontario branch plant.

Borrowing from dependency theory this model describes factors which undermine the Atlantic economy such as the Canadian Tariff, central bureaucratic control and capital outflow. The solution proposed is a more autonomous and more powerful provincial government under the assumption that individual provinces are in the best position to promote internal economic development.

Evidence of the application of this model can be seen in the decentralization of government during the 1970's. Interprovincial barriers to trade and competition among provinces and states for various industrial plants would also seem to be indicators of this theory in action. States rights have always been paramount to the American system of government. The states of New England wield more influence within their borders than do the provinces of Atlantic Canada.

Radical Explanations of Growth and Underdevelopment

Introduction

Like the previous grouping, 'radical' paradigms of growth and underdevelopment reject the orthodox notion of the existence of a natural equilibrium. Most authors in this grouping have a Marxist orientation. The range of models proposed by writers in this vein are, nevertheless, quite broad.

Dependency Theory: The International Debate

Dependency theory, although often identified with the work of A.G.Frank [77] alone, is more accurately described as a wide range of positions articulated by a number of authors describing the inherently exploitive nature of a center/periphery economic system. This body of thought found its expression in the works of a some of South American economists and sociologists, the most well known being Frank. Blomstrom and Hettne saw the emergence of the dependency approach as the result of three factors[78]:

-The convergence of the neo-Marxian[79] and what would become the United Nations Economic Commission for Latin America[80](ECLA) Schools.

-Discussion among Latin American scholars on the reasons for underdevelopment.

-The Latin American critique of modernization theory[81].

While authors in the dependency tradition are quite varied in their approach, attempts have been made to categorize theoretical trends. Matthews identifies four stages in the dependency theory perspective[82].

-The acceptance of the exploitation inherent in a core/periphery relationship among countries.

-The inevitable growth of a reserve army in an exploited region.

-A focus on the social structure that both areas develop as a result regional dependency, and which in turn feeds regional dependency.

-The fourth stage evaluates a shift from identifying links between developed and underdeveloped countries to a focus on the effects of dependency on social and economic structures.

Another author, H.Veltmeyer[83], has identified two basic formulations in dependency theory. The first, the Development of Underdevelopment, is identified with A.G. Frank. The second formulation has been called "dependent capitalist development", "associated dependent development", and the"new dependency theory" and has been identified with Fernando Cardoso[84], Theotonio Dos Santos[83] and others.

The development of underdevelopment formulation is based on the notion that the dominant center drains capital from the exploited periphery, thus preventing the utilization of surplus labour for indigenous growth. In

this respect, underdevelopment is a process as well as a state, and development is regarded as an impossibility in the periphery region or county. This formulation is in direct conflict with the orthodox Marxist approach which sees capitalist development as the necessary forerunner to socialism.

The new dependency theory is an attempt to move further towards orthodox Marxism by recognizing that dependence and development are not contradictory notions. In this formulation multinational corporations and their control over technology are more important than appropriation of capital by the center. Class structures are a product of dependence and individuals are either compromised by the center or fragmented and powerless to resist.

Criticism of dependency theory has been well-rounded. It has been criticized by neo-classical economists on the basis of comparisons with dependent but developed countries such as Canada and Belgium[86]. Orthodox Marxists identified similar faults and criticized dependency theory because of its lack of class analysis[87].

Ernesto Lauclau[88] saw the main flaw in dependency theory as its broad definition of Capitalism. Lauclau saw capital transfer to the center area as a symptom and not a cause of underdevelopment. In Lauclau's view the existence of capitalist and pre-capitalist modes of production and classes is a more reasonable explanation of underdevelopment. In this modes of production approach the

rational for underdevelopment is more likely to be found in a class analysis than in relations between countries and regions.

Applications of dependency theory in its various forms have been limited and mostly unsuccessful[89]. While the theory appears to provide a reasonable explanation for underdevelopment it offers few paths out of it. It does provide an essential counter point to the perspectives already presented.

Regional Underdevelopment and Dependency

The international dependency debate easily lends itself to an analysis of interactions of regions within a single country. Three uniquely Maritime explanations of the regional underdevelopment have arisen based on dependency theory[90]. These relate directly to the major areas of debate in the international literature, the development of underdevelopment, the new dependency approach and the modes of production approach.

A direct application of Frank's theory of the development of underdevelopment was attempted by Bruce Archibald[91]. This application was found wanting in its failure to deal with the many criticisms of Frank. The major problem with this formulating of the dependency thesis was a failure to account for the rapid industrialization of the Maritimes which occurred after 1880[92].

The remaining components of the dependency debate have been given a regional perspective by the so called "Maritime Marxists". The new dependency approach, of which Henry Veltmeyer is a major Maritime proponent, focuses on the creation of an industrial reserve army in the region through the consolidation of capital at the centre[93]. This interpretation of the international new dependency thesis neatly accounts for the deindustrialization of the Maritimes while simultaneously providing an explanation for certain class relations apparent in the Maritime region.

The modes of production approach, of which James Sacouman[94] is the major Maritime proponent is closely related to Lauclau's treatment of the international dependency theory. Sacouman sees a variety of modes of production and related class structures as directly related to the uneven nature of capitalist development. Various social movements in the Maritimes are seen in this light as class reactions to underdevelopment.

The Maritime Marxists have come under broad criticism by more orthodox writers in the Marxist tradition [95]. This criticism relate to the argument made by various exponents of Maritime Marxism that the region's underdevelopment is as much caused by certain structural limits to, and a form of, capitalist development specific to peripheral economies. This viewpoint provides some interesting insight on the New England-Atlantic provinces

comparison through its use of historical evidence and its long term prospective.

Conclusion

While the preceding theoretical review is broad, it is important in the context of this paper to provide a comprehensive review of the major viewpoints on the causes of economic growth. One of the key propositions in the analysis presented in this paper is that growth is a complex process and no one theory adequately deals with all its elements. Growth can however be described in terms of a variety of factors, each with their own theoretical grounding, working in unison to produce economic growth. A review of these factors as they come into play in New England in the context of selected theoretical perspectives is the topic of the next chapter. It is hoped that from this review of resurgent growth in New England some myths of comparability with Atlantic Canada will be exposed. It is also hoped that this review will provide some lessons or at least a better understanding of Atlantic Canada.

Footnotes

1. Atlantic Provinces Economic Council, An Analysis of the Reorganization for Economic Development:Background and Policy Directions, (Halifax: APEC, 1982).

2. Atlantic Provinces Economic Council, An Analysis of the Reorganization for Economic Development:Background and Policy Directions.

3. Tim O'Neill, "Canadian Initiatives Aimed at Maintaining Community Economic Viability/Vitality," Four Nations Conference (Aberdeen, 1984).

4. William Coffey and Marco Polese, "Local Development: Conceptual Bases and Policy Implications," Regional Studies, forthcoming,(1984).

5. Rima provides a good overview of various economic theories. Ingrid Rima, Development of Economic Analysis (Georgetown, Ontario: Irwin Dorsey Limited, 1978).

6. Alfred Marshall, Principles of Economics (New York: MacMillan Press Limited, 1977).

7. John Maynard Keynes, The General Theory of Employment Interest and Money (New York: MacMillan Press Limited, 1974).

8. Robert Freedman ed., Marx on Economics (Harmondworth, Middlesex: Penguin Books Limited, 1961).

9. Economic Council of Canada, Living Together: A Study of Regional Disparities (Ottawa: Department of Supply and Services, 1978), p. 26.

10. Economic Council of Canada, Fifth Annual Review: The Challenge of Growth and Change (Ottawa: Department of Supply and Services, 1968).

11. Clyde Weaver and Thomas Gunton, "From Drought Assistance to Mega-Projects: Fifty Years of Regional Theory and Policy in Canada," Canadian Journal of Regional Science, 5:1 (1982), p. 13.

12. Ibid, pp. 5-38.

13. Tom Courchene, "Interprovincial Migration and Economic Adjustment," Canadian Journal of Economics, 3 (1970), pp. 550-76.
"Alternative Regional Development Strategies in a Federal State," Regional Poverty and Change (Ottawa: Canadian Council on Rural Development, 1976), pp. 91-206.

14. Ralph Matthews, The Creation of Regional Dependency (Toronto: University of Toronto Press, 1983), p. 269.

15. Martin Fransman, Technology and Economic Development, (Bolder: Westview Press, 1986), p. 63.

16. J. E. Meade, A Neo-classical Theory of Economic Growth, 2ed. (New Jersey: Oxford University Press, 1963).

17. Martin Fransman, Technology and Economic Development, p. 63.

18. Ibid.

19. Economic Council of Canada, Living Together, p. 28.

20. Glenna Jenkins "Regional Development in Nova Scotia: Theory, Policy and Practice 1957 - 1983," Diss. Dalhousie, 1984, p. 29.

21. Charles Kindleberger, Economic Development, 2ed. (New York: Mcgraw-Hill Book Company, 1958), p. 45.

22. Ibid., p. 51.

23. Bill McCarten,"Industrial Policy: A Study In Political Economy," APEC Working Paper,(1982), p. 39.

24. Canada, The White Paper on Employment and Incomes, (Ottawa: Kings Printer, 1945).

25. W.J. Smith, "Recognition of Regional Balance", Policy Options, 2:50 (1981), p. 49.

26. Magnus Blomstrom and Bjorn Hettne, Development Theory in Transition (Bath: Pitman Press, 1984), p. 9.

27. Ralph Matthews, The Creation of Regional Dependency, p. 49.

28. Ibid. p. 51.

29. Magnus Blomstrom and Bjorn Hettne, Development Theory in Transition, p. 88.

30. Henry Veltmeyer, "A Central Issue in Dependency Theory," Canadian Review of Sociology and Anthropology, 17:3, (1980).

31. Clyde Weaver and Thomas Gunton, "From Drought Assistance to Mega-Projects," p. 7.

32. Harold Innis, Essays in Canadian Economic History, (Toronto: University of Toronto Press, 1957).

33. W.A. Mackintosh, "Innis on Canadian Economic Development," Journal of Political Economy, (June ,1955).

34. Douglas North, "Location Theory and Regional Economic Growth," Journal of Political Economy, No. 63, (June, 1955).

35. Walt Rostow, The Stages of Economic Growth: A Non-Communist Manifesto, (Cambridge University Press, 1961).

36. Walter Isard, Introduction to Regional Science, (Englewood Cliffs, New Jersey: Prentice Hall Inc., 1975).

37. Harold Innis, Essays in Canadian Economic History.

38. Mel Walkins, "A Staple Theory of Economic Growth," Canadian Journal of Economics and Political Science, 29:2 (1963) pp. 141-158.

39. Clyde Weaver and Thomas Gunton, "From Drought Assistance to Mega-Projects," p. 8.

40. Ibid. p. 9.

40. Comments by James McNiven to the Atlantic Association of Applied Economists, June 1987.

41. Douglas North, "Location Theory and Regional Economic Growth,".

42. W.A. Lewis, Theory of Economic Growth, (London: Allen and Unwin, 1955).

43. Walt Rostow, The Stages of Economic Growth: A Non-Communist Manifesto.

44. Ibid. pp. 17-35.

45. Economic Council of Canada, Living Together, p. 28.

46. Walter Isard, Introduction to Regional Science, p. 5.

47. August Losch, "The Nature of Economic Regions," Southern Economic Journal, 29 (August, 1963).

48. Walter Isard, Introduction to Regional Science.

49. Francois Perroux, "Economic Space:Theory and Applications," Quarterly Journal of Economics, 64 (February, 1950).

50. Tom Courchene, "Interprovincial Migration and Economic Adjustment".

51. Economic Council of Canada , Living Together, p. 30.

52. Gunnar Myrdal, Economic Theory and Underdeveloped Regions, (London: Gerald Duckworth and Co. Ltd., 1957).

53. Atlantic Provinces Economic Council , The Atlantic Economy:Third Annual Review (Halifax: APEC, September, 1969).

54. John Friedmann, "A General Theory of Polarized Development," in Niles Hansen (ed.), Growth Centers in Regional Economic Development (New York: Free Press, 1967), pp. 82-101.

55. Clyde Weaver and Thomas Gunton, "From Drought Assistance to Mega-Projects," p. 18.

56. Ronald F. Ferguson and Helen F. Ladd, Economic Performance and Economic Development Policy in Massachusetts, (Cambridge: John F. Kennedy School of Government, Harvard University, May, 1986), p. 72.

57. Mel Walkins, "A Staple Theory of Economic Growth,".

58. J.S. Little, "The Industrial Composition of Foreign Direct Investment in The United States and Abroad: A Preliminary Look," The New England Economic Review, (May/June, 1984), pp. 38-48.

59. E.F. Schumacher, Small is Beautiful: A Study of Economics as if People Mattered, (New York: Harper and Row, 1975)

60. Ibid., p. 140.

61. Ibid., p. 146.

62. Glenna Jenkins "Regional Development in Nova Scotia: Theory, Policy and Practice 1957 - 1983," p. 37.

63. Atlantic Provinces Economic Council, Local Initiatives for Economic Development (Halifax: APEC, 1963), p. 12.

64. J.A. Schumpeter, The Theory of Economic Development (Cambridge: Harvard, 1949).

65. Charles Kindleberger, Economic Development, 2ed., p. 137.

66. J.A Schumpeter, Capitalism, Socialism and Democracy (London: Unwin University Books, 1943) p. 134.

67. A.H. Cole, "A New Set of Stages," Explorations in Entrepreneurial History, p. 355.

68. Atlantic Provinces Econ mic Council, Analysis of the Reorganization for Economic Development:Background and Policy Directions,(Halifax: APEC, 1982)

69. A.L. Levine, Retardation and Entrepreneurship, (Fredericton: Atlantic Provinces Economic Council, 1965).

Roy E. George, A Leader and a Laggard: Manufacturing Industry in Nova Scotia, Quebec and Ontario (Toronto: University of Toronto Press, 1970).

70. A.M. Sinclair, "Problems of Underdevelopment in Atlantic Canada: With Special Reference to Nova Scotia," Symposium on Problems of Development in Atlantic Canada, The Royal Society of Canada, (April, 1975), p. 60.

71. A.L. Levine, Retardation and Entrepreneurship.

72. Martin Fransman, Technology and Economic Development, p. 59.

73. Gerry Sweeney, Innovation Policies: An International Perspective (London: Frances Pinter Publishers Ltd., 1985).

74. Ralph Matthews, The Creation of Regional Dependency.

75. Ibid., p. 6.

76. Bill McCarten,"Industrial Policy: A Study In Political Economy".

77. A.G. Frank, Capitalism and Underdevelopment in Latin America, (New York: Monthly Review Press, 1976)

78. Magnus Blomstrom and Bjorn Hettne, Development Theory in Transition, p. 27.

79) This approach focuses on the possibility of uneven development as opposed to the orthodox Marxist approach of the inevitability of development.

Paul A. Baron, The Political Economy of Growth (New York: Monthly Review Press, 1957)

80. Magnus Blomstrom and Bjorn Hettne, Development Theory in Transition, p. 38.

81. Ibid., p. 45.

82. Ralph Matthews, "Two Alternative Explanations of the Problems of Regional Dependency in Canada," Canadian Public Policy, pp. 278-9.

83. Henry Veltmeyer, "A Central Issue in Dependency Theory".

84. Fernardo Cardoso, "Associated Dependent Development: Theoretical and Practical Implications," in Authoritarian Brazil, Alfred Stefan (ed.), (New York: Yale University Press, 1973), pp. 146-76.

85. Theotonio Dos Santos, "The Crisis of Development Theory and the Problem of Dependency in Latin America," in Underdevelopment and Development in the Third World Today, Henry Bernstein ed. (Middlesex: Penguin Books, 1973), pp. 57-80.

86. Magnus Blomstrom and Bjorn Hettne, Development Theory in Transition, pp. 79-81.

87. Ibid., p. 81.

88. E. Laclau, "Feudalism and Capitalism in Latin America," New Left Review, No. 67, (1971).

89. Application of dependency theory to the problem of Jamaica during the 1970's fell far short of objectives.

90. Gene Barrett, "Perspectives on Dependency and Underdevelopment in the Atlantic Region," Canadian Review of Sociology and Anthropology, 17:3 (1980), pp. 273-85.

91. Bruce Archibald, "The Development of Underdevelopment in the Atlantic Provinces," an unpublished M.A. Thesis, Dalhousie (Halifax, 1971).

92. T.W. Acheson, " The National Policy and Industrialization of the Maritimes 1880 - 1910," Acadiensis (Autumn, 1972).

93. Henry Veltmeyer, "A Central Issue in Dependency Theory".

94. James Sacouman, "The Peripheral Maritimes and Canada-Wide Marxist Political Economy," Studies in Political Economy (Autumn, 1981).

95. James Bickerton, "Underdevelopment and Social Movements in Atlantic Canada: A Critique," Studies in Political Economy: A Socialist Review (Fall, 1982), p. 191.

CHAPTER IV

REASONS FOR GROWTH

Introduction

The reasons for economic growth, or a lack of it, are complex. Growth in the real world often defies description by any single theoretical perspective. In the previous section we reviewed a range of ideas on economic development and underdevelopment. In this section we will capture within these broad theoretical perspectives those factors which best describe the process of growth in New England.

Certain elements have been identified, through consensus, as the main contributing factors to New England's recent economic resurgence. It is the position of this paper that it is not their existence which promotes growth, but their interaction and interdependence which contributes to the vibrance of New England. These factors will be reviewed in some detail for both New England and Atlantic Canada. Their existence or absence in Atlantic Canada would be relevant in determining if the factors which drove the New England 'miracle' can provide lessons for other jurisdictions.

While some aspects of New England's resurgence fit neatly into the broad perspective of neo-classical economics, this perspective does not deal with the key factors of economic growth at the micro level. Theories of regional science and the neo-Schumpeterian view of the

growth process provide a better analysis at this level. While much that has occurred in New England can be explained by the interaction of a variety of factors, theoretical perspectives provide additional explanatory detail and allow a degree of comparison between regions. However, some theories reviewed in the previous section are notable for their inability to account for the main factors of growth in either region. In addition, no one theory is able to account for all the main factors of growth in either region.

Background to Growth in New England

The rebirth of the New England economy since 1975 has been the subject of considerable economic research, both from inside and outside this region. Researchers and practitioners from a host of industrialised and emerging nations have traveled to New England hoping for a model of growth that they could apply at home. What most found was that the resurgence of the New England economy is based on the region's capacity and ability to respond to growing worldwide demand for certain goods and services, specifically high tech manufactured goods and financial services.

A variety of authors have identified factors, some unique to New England, that account for the region's ability to respond to a changing economic environment[1]. These include: the existing industrial base, defence spending on

procurement and research and development, availability of appropriate forms of investment capital, the existence of top notch educational institutions, a consistently high level of research and development activity, an appropriate business environment, the existence of appropriate government policies and programs, and flexible labour markets conducive to necessary adjustment in declining industries and the economy as a whole.

Observers point not only to the existence of these factors conducive to growth, but to their interlinkage as the key to New England's growth. This growth is based directly on the region's success in high technology manufacturing. This is in direct contrast to most national and regional patterns which show sharp declines in industrial employment and sharp gains in the service sector in a manner typical of most post-industrial societies.

This transformation of the manufacturing sector in New England was not easy. While the region possessed certain "natural" advantages, certain disadvantages had to be overcome. Until the mid-to-late 1970's, the economy of New England was in serious difficulty. Its major industries were in decline. So-called mature industries - textiles, leather working, and so on - were facing severe competition from low wage competitors in the South and developing countries. Hundreds of thousands of jobs disappeared in a large scale structural adjustment which contributed to

stagnant population and labour force growth. Between 1968 and 1975, New England's manufacturing sector lost about a quarter of million jobs[2].

The severity of these job losses was ameliorated somewhat by an expansion of defence-related and high technology manufacturing during the Vietnam era, in the 1960's. Military spending fell off in the early 1970's with the end of the war and unemployment rates promptly reached double digit levels, higher than comparable figures in Atlantic Canada.

Prospects for the 1980's did not seem good. New England faced a number of disadvantages compared to other regions of the United States:

- limited natural resources.
- inefficient transportation system.
- high energy costs.
- industrial plant 35% older than the U.S. average.
- higher wages than many areas of the United States.
- a heavier tax burden than some southern States[3].

The region was not without its advantages however:

- a skilled labour force.
- manufacturing wages 10% below the U.S. average.
- a regional pool of professional venture capital.
- large pools of informal investors (old money).
- a tradition of entrepreneurship and self reliance.
- an established defence industry infrastructure
- world class universities and technical schools.

The recovery of the New England economy since the mid-1970's suggests a picture of a high technology based economy able to minimize its disadvantages and maximize its advantages. Growth has been based on a strong high tech sector (figure 1) together with strong locally focused service sector growth (figure 2). Using the list of high technology industries listed in figure 1, the New England Council Inc. found that the New England states ranked at or near the top in terms of high technology employment growth as a percentage of total employment growth between 1975 and 1982[4]. Massachusetts, Vermont, New Hampshire, Connecticut, Rhode Island, and Maine ranked first, second, fourth, fifth, tenth and twelfth respectively.

A number of factors have contributed to the development of high technology industry in New England, but their success at creating growth is quite likely the product of a unique set of historical circumstances that brought all factors into play in an interrelated way at the most opportune point of time.

Regional science theory tells us that a solid economic base which provides for agglomeration economies is vital to growth. Early industrialization in New England created a pool of skilled labour and entrepreneurial talent upon which high technology industries drew. Prominent among these

Figure 1

HIGH TECHNOLOGY SECTORS(1)

- Chemicals and Allied Products
  - Industrial Inorganic Chemicals
  - Plastic Materials and Synthetics
  - Drugs
  - Soaps and Cleaners
  - Paints and Allied Products
  - Industrial Inorganic Chemicals
  - Agricultural Chemicals
  - Miscellaneous Chemical Products
- Petroleum Refining
- Fabricated Metal Products
  - Ordnance and Accessories
- Nonelectronic Machinery
  - Engines and Turbines
  - Nonelectronic Industrial Machinery
  - Office, Computing and Accounting Machines
- Electronic Equipment
  - Electrical Transmission Equipment
  - Electrical Industrial Apparatus
  - Radio and TV Receiving Equipment
  - Communication Equipment
  - Electronic Components
  - Semiconductors
  - Miscellaneous Electrical Machinery
- Transportation Equipment
  - Aircraft and Parts
  - Guided Missiles and Space Vehicles
- Instruments
  - Engineering, Laboratory, Scientific and Research Instruments
  - Measuring and Controlling Instruments
  - Optical Instruments and Lenses
  - Surgical, Medical and Dental Instruments
  - Photographic Equipment
- Business Services
  - Computer and Data Processing Services
  - Research and Development Laboratories

(1) Defined as High tech in meeting two criteria: industries with a proportion of technology-oriented workers equal to or greater than the average for all manufacturing industries; and a ratio of R&D expenditures to sales close to or above the average for all Industries.

Source: Reproduced From New England Adapting to Change: A competitive Strategy, The New England Council Inc., (Boston, 1985) p.79.

Figure 2

SERVICE INDUSTRIES

Transportation and Communication
- Trucking and Warehousing
- Other Transportation Services, Rail, Air, and so on
- Telephone, Telegraph, Radio, TV and other Communication Services
- Postal and Courier

Wholesale and Retail Trade

Finance, Insurance and Real Estate
- Banks
- Trust Companies
- Credit Unions
- Consumer Loan Companies
- Business Financing Companies
- Investment Dealers
- Life, Health and Property Insurance
- Operators of Buildings and Dwellings
- Real Estate Agencies

Community, Business and Personal Services
- Business, Health, Legal and Educational Services
- Accommodation Services
- Food And Beverage Services

Public Administration and Defence

Source: The Conference Board of Canada.

industries was a New England defence establishment which traditionally received a higher proportion of defence contracts than any other part of the country. New England also benefited from the existence of large high quality educational and financial institutions. Atlantic Canada, while demonstrating some of the features of New England, lacked much in terms of economic base. The few components of a growth oriented economic base that do exist lack integration into the broader economy.

The macroeconomic neo-classical view of the events in New England would highlight the fact that high technology industries took hold at a low point in New England's economic cycle. Structural adjustments in declining industries meant that high technology industries did not have to compete for manpower and venture capital. New England's success can also be tied, to some degree, to the favourable business environment, low cost labour, lower levels of taxation, and so on.

The neo-Schumpeterian approach to development would highlight the mechanisms by which invention generated in the laboratories of the region's research and development organizations, MIT and so on, become innovation through the action of entrepreneurs and with the guidance and sometimes direct support of government.

Identifying the key factors in the resurgence of New England may be of little direct benefit to Atlantic Canada. New England's recent performance seems largely indigenous and spontaneous rather than the result of a planned effort

to attract industry. However, the process by which growth occurred and the theories which explain the process may hold some important lessons.

Agglomeration Economies

Economic Base and Economic Linkages

Historical Developments

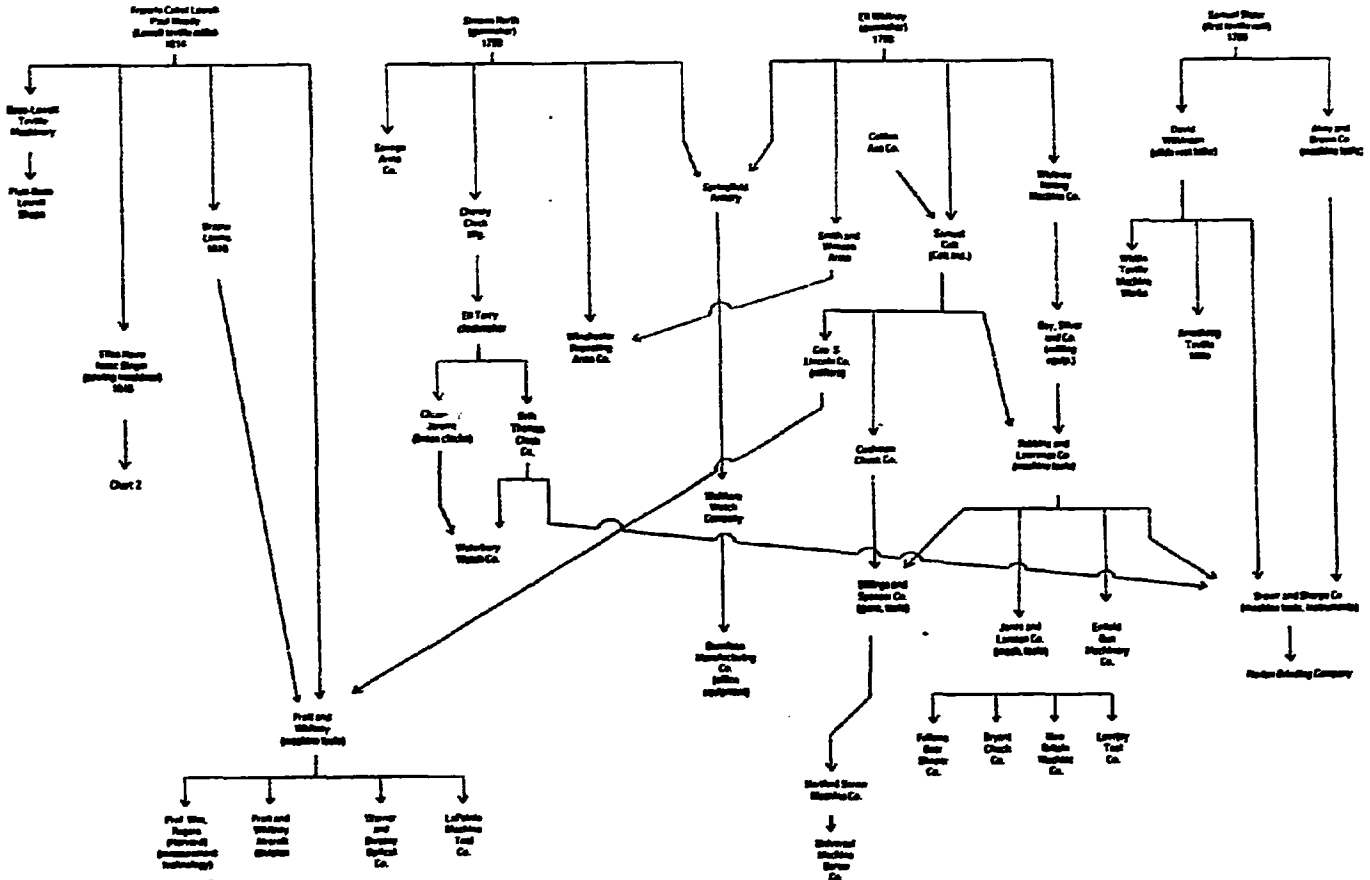
Within the regional science paradigm, there are three distinctive influences on economic development and locational decisions: Proximity to natural resources, availability of markets, or the existence of a large industrial agglomeration[5]. New England, unlike Atlantic Canada, has few natural resources. New England and the Atlantic region share less than favourable peripheral locations. New England's problem in this respect is much less severe. New England does benefit from significant agglomeration economies of scale, industrial and service sector concentration, and urbanization (concentration of skilled workers). Agglomeration economies, in general tend to lower the cost of production by making available a wide variety of materials, labour and services, on short notice and in abundance. Thus one of the keys to economic growth and development is the existing economic base.

New England has had an industrial base in the forefront of contemporary technology for almost 200 years. The industrial diffusion process, illustrated by figure 3, tracks the development of the machine tool industry which was the forerunner of today's high technology sector. These older firms were primary sources of skilled labour, capital and business talent[6]. The recent industrial diffusion process in figure 4 shows MIT and a variety of firms dependent on government/military research, at the core of recent economic development. While urbanization economies provide a partial explanation of this second process, the regional development paradigm does not provide a good explanation of the influence of government procurement on demand or of the process of innovation in general. The neo-Schumpeterian approach provides some perspective on these factors and will be discussed later.

The history of corporate development in Atlantic Canada has been different. The lack of any industrial concentration of significant size indicates a probable absence of agglomeration effects. Figures 5 and 6 provide a historical outline of selected Atlantic Region companies. Three main observations can be drawn from these diagrams:

Figure 3

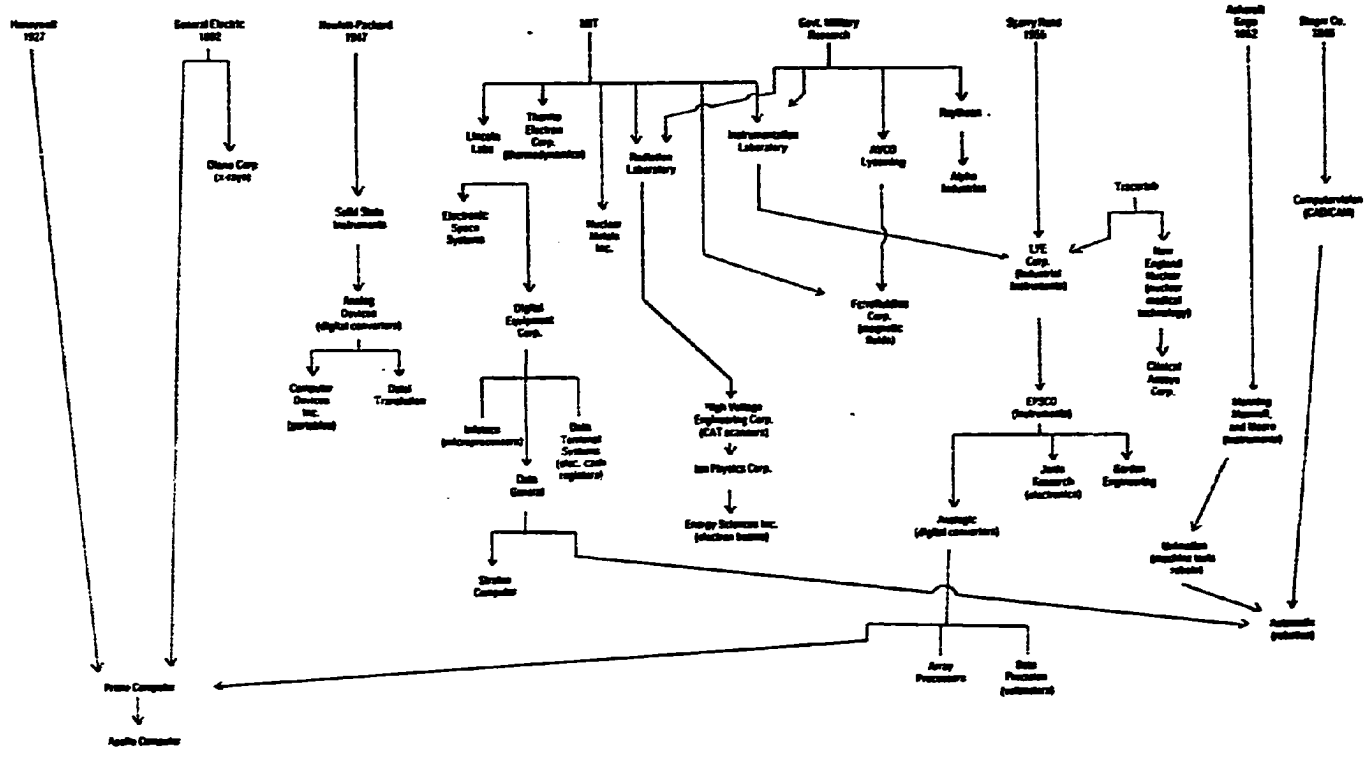
Industrial Diffusion in New England, 1790–1900



Source: New England Journal of Business and Economics (Spring 1982)

Figure 4

The Diffusion Process in Recent New England History



Source: New England Journal of Business and Economics (Spring 1982)

FIGURE 5

Growth Patterns of Selected Secondary Manufacturing Companies in the Atlantic Provinces

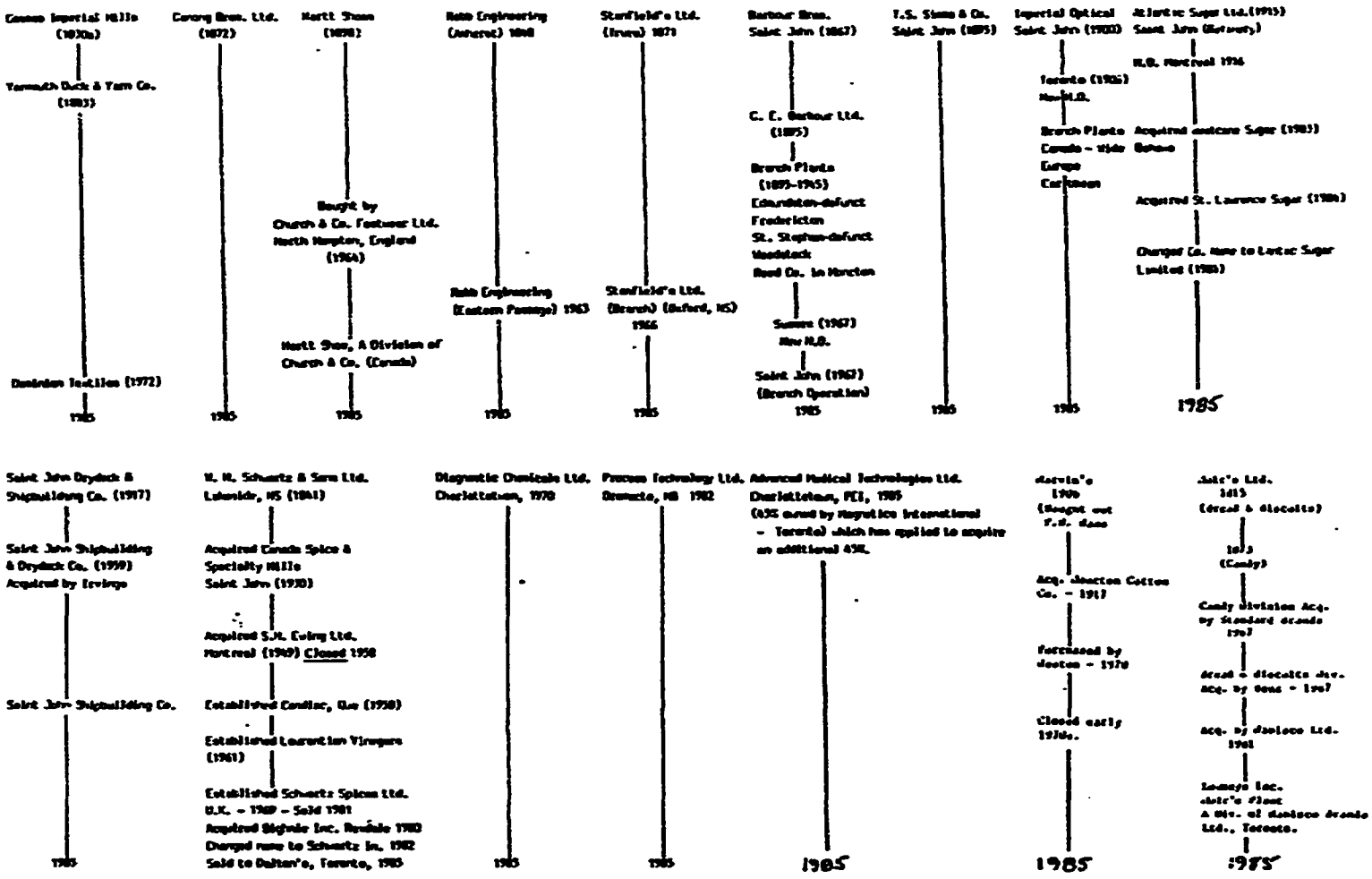
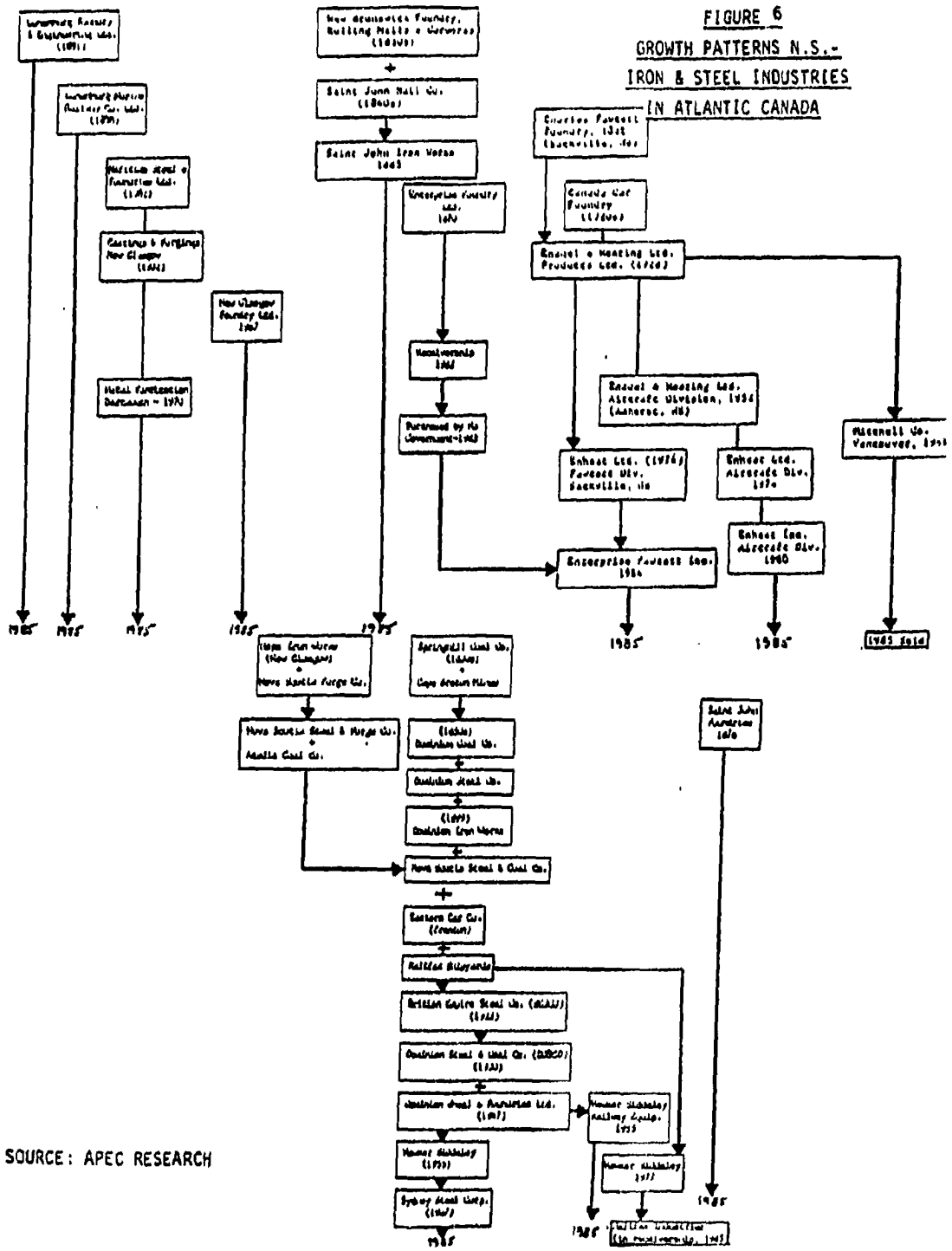

Bought by
Church & Co. Footwear Ltd.
North Hampton, England
(1964)
Hartt Shoe, A Division of
Church & Co. (Canada)
Stanfield's Ltd.
(Brunswick) (Oxford, NS)
1966
C. E. Barbour Ltd.
(1895)
Branch Plants
(1895-1965)
Edmundston-defunct
Fredericton
St. Stephen-defunct
Woodstock
Head Co. in Moncton
Sussex (1967)
New N.B.
Saint John (1967)
(Branch Operation)
1985
Toronto (1926)
New N.B.
Branch Plants
Canada - Wide
Europe
Caribbean
Acquired Redpath Sugar (1981)
Refinery
Acquired St. Lawrence Sugar (1986)
Changed Co. Name to Lantic Sugar
Limited (1988)
1985
Saint John Shipbuilding
& Dryduck Co. (1959)
Acquired by Irvings
Saint John Shipbuilding Co.
1985
Acquired Canada Spice &
Specialty Mills
Saint John (1930)
Acquired S.H. Ewing Ltd.
Montreal (1969) Closed 1958
Established Candiac, Que (1958)
Established Laurentian Vinegars
(1961)
Established Schwartz Spices Ltd.
U.K. - 1969 - Sold 1981
Acquired Edgvale Inc. Dundalk 1980
Changed name to Schwartz Inc. 1982
Sold to Dalton's, Toronto, 1985
Diagnostic Chemicals Ltd.
Charlottetown, 1978
1985
Process Technology Ltd.
Dieppe, NB 1982
1985
Advanced Medical Technologies Ltd.
Charlottetown, PEI, 1985
(63% owned by Hayatics International
- Toronto) which has applied to acquire
an additional 45%.
1985
1985
1985

FIGURE 6

GROWTH PATTERNS N.S.-

IRON & STEEL INDUSTRIES

IN ATLANTIC CANADA



SOURCE: APEC RESEARCH

First, Atlantic region manufacturing industries are largely resource based and controlled from outside the region and have failed to establish horizontal and vertical linkages consistent with export based growth and the formation of agglomeration economies. Second, Atlantic companies are susceptible to outside takeover; And third, government and universities are not well integrated into the economic structure of the region.

Dynamic Linkages Between Sectors

Agglomeration economies means that the existence of one firm tends to attract related firms that either provide inputs or make use of the output of the first firm. This activity, repeated over and over, tends to forge dynamic linkages leading to the creation of a 'critical mass' which can become self-sustaining. Components of this critical mass include not only industrial companies, but financial institutions, and universities and technical institutions.

The pattern in New England has been for firms to locate in areas where they can take advantage of existing infrastructure and good industrial linkages. While Figure 6 provides a good indication of the extent of linkage between firms, Figure 7 demonstrates the high level of corporate concentration. Forty-nine of the 1985 Fortune 500 were

Figure 7

New England Companies In Fortune 500

Ranked by Sales

Rank		($000)
9	General Electric (Fairfield, Conn.)	27,947,000
16	United Technologies (Hartford, Conn.)	16,331,757
35	Union Carbide (Danbury, Conn.)	9,508,000
38	Xerox (Stamford, Conn.)	8,971,300
58	Raytheon (Lexington, Mass.)	6,184,159
65	Digital Equip. (Maynard, Mass.)	5,504,426
70	Champion International (Stamford, Conn)	5,121,089
122	Textron (Providence, R.I.)	3,221,100
124	American Can (Greenwich, Conn.)	3,177,900
148	Singer (Stamford, Conn.)	2,518,800
153	AMAX (Greenwich, Conn.)	2,398,900
160	Gillette (Boston, Mass.)	2,288,600
164	Uniroyal (Middlebury, Conn.)	2,209,974
165	Wang Laboratories (Lowell, Mass.)	2,184,700
176	AVCO (Greenwich, Conn.)	2,080,978
178	Olin (Stamford, Conn.)	2,065,328
194	Great Northern Nekoosa (Stamford, Conn)	1,873,300
197	Chesebrough-Pond's (Greenwich, Conn.)	1,857,330
208	Emhart (Farmington, Conn.)	1,794,500
210	General Signal (Stamford, Conn.)	1,786,883
214	Cabot (Boston, Mass.)	1,752,523
217	Pitney Bowes (Stamford, Conn.)	1,732,095
235	Stauffer Chemical (Westport, Conn.)	1,504,095
301	Lone Star Industries (Greenwich, Conn.)	1,006,565
324	General Cinema (Chestnut Hill, Mass.)	916,330
345	Scovill (Waterbury, Conn.)	824,993
354	Insilco (Meriden, Conn.)	786,894
356	Idle Wild Foods (Worcester, Mass.)	780,860
361	Coleco Industries (West Hartford, Conn.)	774,860
363	M/A-Com (Burlington, Mass.)	768,449
366	Sanders Associates (Nashua, N.H.)	746,138
373	Hasbro Bradley (Pawtucket, R.I.)	714,392
381	Echlin (Branford, Conn.)	688,971
384	Dennison Mfg. (Framingham, Mass.)	684,034
390	Armstrong Rubber (New Haven, Conn.)	665,630
398	Tyco Laboratories (Exeter, N.H.)	650,064
400	Prime Computer (Natick, Mass.)	642,779
409	Dexter (Windsor Locks, Conn.)	625,209
421	Nashua (Nashua, N.H.)	591,337
434	Warnaco (Bridgeport, Conn.)	561,391
436	Computervision (Bedford, Mass.)	556,342
447	Moore McCormack Resources (Stamford, Conn.)	528,848
455	Foxboro (Foxboro, Mass.)	515,856
458	Nortek (Providence, R.I.)	506,179
471	Stanadyne (Windsor, Conn.)	470,737
472	Harvey Hubbell (Orange, Conn.)	467,133
478	Ocean Spray Cranberries (Plymouth, Mass.)	457,031
485	United States Tobacco (Greenwich, Conn.)	441,405
495	Wyman-Gordon (Worcester, Mass.)	425,459

Source: Fortune 500.

located in New England. A comparable listing for the Atlantic region in Figure 8 shows no such concentration of large industrial firms or head offices. Most major companies in the Atlantic region are either resource-based, utilities or financial companies.

Proximity to Markets

Despite its location on the periphery of the United States, New England has certain advantages related to proximity to markets and ease of transportation. The region's small size but relatively large population give it a rather significant and concentrated indigenous market.

Distances to major population and industrial centres are not overly large. For example, 26 percent of U.S. manufacturing firms are within 300 miles of Connecticut, 32 percent within 500 miles[7]. This 500-mile radius includes 20 percent of the U.S. population and 62 percent of Canada's[8].

New England has a transportation system well tuned to its needs. The logic of establishing a high technology plant along Route 126 in Massachusetts is clear Logan International Airport in Boston has been cited as of particular importance to the continued growth of the high technology sector[9]. The availability of air freight

Figure 8

ATLANTIC CANADIAN COMPANIES
IN FINANCIAL POST 500 AND ATLANTIC BUSINESS 100

(Ranked By Sales)

Financial Post 500	Atlantic Business "100"	Company	Sales ($000)
103	4	McCain Foods (Florenceville, NB)	847,000
113		New Brunswick Electric Power Commission (Fredericton, NB)	768,678
116	3	Empire Co. (Stellarton, NS)	755,753
166	6	Nova Scotia Power Corp. (Halifax, NS)	476,081
188	62	National Sea Products, (Halifax, NS)	404,964
254	8	Maritime Tel & Tel (Halifax, NS)	282,180
255	21	Newfoundland & Labrador Hydro (St. John's, Nfld.)	279,138
261	9	Co-op Atlantic (Moncton N.B.)	259,017
265	not listed	Fisheries Products International (St. John's, Nfld.)	262,404
277	47	Lundrigan Group Ltd. (Corner Brook, Nfld.)	106,240
289	10	N.B. Tel., (Saint John, NB)	229,591
327	13	Newfoundland Light & Power Co. (St. John's Nfld.)	197,217
396	16	Cape Breton Development Corp. (Sydney, NS)	139,195
444	25	Scotsburn Co-operative Services (Scotsburn, NS)	109,275
479	39	Farmer's Co-op Dairy Ltd. (Halifax, NS)	93,077
488	not listed	Newfoundland Capital Corp. (St. John's, Nfld.)	89,282

Sources: The Financial Post 500,
Atlantic Business.

services is critical for the computer and the computer services sector. Ship and rail modes of transportation are less well developed in the region but this presents few problems given the high value, non-resource nature of New England industry.

A small and dispersed indigenous market together with high transportation costs, infrequent services, poor transportation infrastructure and a host of other transportation problems are a major concern in Atlantic Canada. Table 8 demonstrates the scale of the market access and transportation difficulties facing Atlantic industry.

Defence Spending

Procurement

The nature of a particular region's industrial structure is a key element of the regional science framework. New England's economy, particularly its manufacturing sector, is heavily dependent on defence contracts. Groups of companies related to defence procurement could easily be termed "propulsive or motor industries", the key force in the growth pole paradigm.

Table 8

Distance From Halifax to Selected Cities

Halifax to:	Road	Air
Saint John, N.B.	309	200
Boston, Ma.	921	692
Montreal, Que.	1,249	843
New York, N.Y.	1,278	1,010
St. John's, Nfld.	1,503	913
Toronto, Ont.	1,788	1,335
Vancouver, B.C.	6,050	4,643
London, England		4,768

Source: Atlantic Provinces Economic Council, Except from a presentation to the Minister of Regional Industrial Expansion, 1985.

Such industries typically pay high wages, are rapidly growing and easily forge links with other sectors of the economy.

New England's share of prime defence contracts, 11.1 percent of the national total in 1985[10], is substantially greater than its share of the national population, about 5.3 percent[11]. Defence oriented industries accounted for 7.5 percent of total New England manufacturing employment in 1980[12]. About 16 percent of all jobs in New England owe their existence, directly or indirectly, to the Department of Defence[13].

A review of Table 9 shows a heavy concentration of prime contracts in Connecticut and Massachusetts. Table 10 shows the focus of the regions defence related industries. Prime contractors generally make use of many sub-contractors distributed among the other New England states[14]. Sub-contracts although not formally recorded, form an important part of the economies of these states. In fact, the total labour force employed on defence contracts typically exceeds total construction employment in the region[15].

Defence spending is prone to cyclical fluctuations. For example, a number of high technology firms were established during the Vietnam war. The value of prime defence contracts in the U.S. during 1967 was $53 billion (1972 dollars), but dipped to $33 billion in 1976,

Table 9

United States Department of Defence Contract Awards
By State and Region ($ millions)
(1980-85)

State	1980	1981	1982	1983	1984	1985
Maine	457	475	784	405	532	957
N. H.	305	392	538	541	663	678
Ver.	124	167	702	180	170	163
Mass.	3,729	4,596	5,301	6,328	7,029	7,714
Conn.	3,867	4,492	5,897	5,132	5,459	5,543
R. I.	261	235	285	381	396	431
New Eng.	8,482	10,357	13,007	12,967	14,249	15,486
U. S.	76,430	96,653	115,280	118,744	124,015	140,096

Source: U. S. Department of Defence.

Table 10

Defence Specialties of the New England States in 1980

	Percent of Total New England Contracts	Percent of Total United States Contracts
Aircraft	43.4	25.2
Aircraft Engines	34.2	74.4
Missiles	13.9	13.1
Elect.& Comp. Equip	12.4	10.2
Ships	12.2	17.1
New England Total	100.0	12.9

Source: U.S. Dept. of Defence

rebounding to $43 billion by 1980[16]. This surge in spending after 1976, continuing well into the 1980's, was an important factor in New England's strong economic performance in the early 1980's. Defence spending in the U.S. increased from 76.4 billion to 140.1 billion from 1980 to 1985[17]. Spending in New England increased from 8.5 billion to 15.5 billion over the same five year stretch.

The Atlantic region, in contrast, appears to receive far less than its share, by population of prime defence contracts. Table 11 shows that the region received 2.5 percent of capital expenditures in the 1980-81 fiscal year, despite having over 10 percent of the nations population and almost one quarter of defence department personnel[18]. Table 12 is more revealing on the nature of defence procurement in Canada. Using one of the major tools of regional science, the input-output model, it can be shown that for every dollar spent on military procurement in Atlantic Canada, forty-four cents is spent within the region, twenty-five cents ends up in central Canada and thirty cents leaves the country. Similarly, a dollar spent in Ontario leaves sixty-nine cents in that province, eighteen cents goes to imports and only one cent ends up in Atlantic Canada. Not only does Atlantic Canada get a very small share of overall procurement but leakages account for 56 percent of that share.

Table 11

Department of National Defence Capital Expenditures
(1980-81 Fiscal Year)

Province	Expenditure ($000s)	In Canada (%)	Total (%)
Newfoundland	720	0.1	0.1
P.E.I.	81	0.0	0.0
Nova Scotia	10,027	2.0	1.0
New Brunswick	2,041	0.4	0.2
Quebec	130,838	25.8	13.4
Ontario	328,976	64.9	33.7
Manitoba	16,140	3.2	1.7
Saskatchewan	1,827	0.4	0.2
Alberta	6,102	1.2	0.6
B.C.	9,671	1.9	1.0
Terr.	27	0.0	0.0
Canada	506,450	99.9	51.9
Foreign	496,020	-	100.0

Source: CSDRM, Economic Impact of Canadian Defence Expenditures, R.M.C. (Kingston, 1983)

Table 12

Inter-Regional Trade Flows
Per Dollar of Defence Procurement Expenditures
(1982-1983)

Region of Production	Region of Expenditure				
	Atlantic	Quebec	Ontario	Prairies	B.C.& Terr.
Atlantic	0.44	0.01	0.01	0.00	0.00
Quebec	0.10	0.53	0.08	0.04	0.04
Ontario	0.15	0.15	0.69	0.12	0.11
B.C. & Terr.	0.00	0.00	0.03	0.03	0.59
Imports	0.30	0.29	0.18	0.08	0.16
Total	1.00	1.00	1.00	1.00	1.00

Source: Statistics Canada Interprovincial (Open) Input-Output Model.

Another indicator of the level of activity is the pattern of use of the Defence industry Productivity Program, which provides assistance to Canadian defence contractors. Table 13 shows that the program goes almost unused in the Atlantic region despite a significant level of defence procurement activity in the region. This would seem to offer more evidence of significant leakages of the benefits of procurement in the Atlantic region to other regions of the country. These statistics indicate that Ontario and Quebec get most of the direct benefits of procurement. Defence procurement is very much a political issue in Canada, with political clout counting for at least as much as comparative advantage. The potential for defence related industries to act as propulsive industries in Canada is also limited by scale. About the same amount of U.S. dollars were spent on military procurement in the state of Maine as in all of Canada in 1980. Expenditures in New England alone were almost twenty times the Canadian total.

Table 13

Project Authorization Under
The Defence Industry Productivity Program
(1982-83 fiscal year)

	Number of Projects	Amount ($ millions)
Newfoundland		
Prince Edward Island		
Nova Scotia	2	1.4
New Brunswick		
Quebec	45	58.4
Ontario	86	98.5
Manitoba	9	8.7
Saskatchewan	1	1.4
Alberta	2	1.1
British Columbia	10	11.7
Yukon		
Northwest Territories		
Total	115	181.2

Source: Industry Trade and Commerce and Department of Regional Economic Expansion Annual Report 1982-83.

Research and Development

The regional science paradigm does not deal well with the role of research and development and the diffusion of technology in a regional economy. The developmental approach provides a better description of the importance of research and development to a developing economy. It is the neo-Schumpeterian school of thought that best describes the process of innovation, however. The regional science approach does tend to recognize the importance of research and development in solidifying a region's economic base.

The U.S. Department of Defense plays an important role in funding university and private sector research in New England. Defence procurement combined with significant levels of funded research and development tends to broaden and deepen the base of New England's high technology sector[19]. One study points to 48 spin-off companies generated from the research and development efforts at Draper Labs in Massachusetts[20]. Figure 4 points to the strong integration of military research and various companies and institutions in New England.

The integration of military research with academic institutions is particularly important. Thirty-seven institutions in New England have engineering programs[21]. These programs provide the base for research and development related to high technology in the region. The military research and development base has existed for some time in New England. The United States' leading science advisor

during World War II, MIT's Vennevar Bush, helped direct 75 wartime contracts, worth $117 million, to MIT[22]. In 1983, MIT was the fifth largest defence contractor in Massachusetts, receiving $245 million for research on radar and communications[23].

Canada lags well behind most industrialized nations in research and development spending. In 1984 the federal government funded $2.2 billion in research and development activity in all sectors of the economy[24]. In that same year the American government spent $44.2 billion on research and development[25]. Atlantic Canada received about nine percent of the Canadian total, about $ 201 million[26].

Payments to Canadian industry for research and development by the department of national defence amounted to $81.5 million in 1986[27]. Payments to Canadian universities for research and development by DND amounted to only $8 million[28]. Clearly, it can be seen from these statistics that it is unlikely that Atlantic Canada and indeed Canada could develop meaningful agglomeration economies related to defence related research and development.

Personnel

In contrast to spending on procurement and research and development, per capita spending on military wages and salaries in New England has been at or below the national

average in recent years. This is in contrast to Atlantic Canada, where per capita military spending on wages and salaries is well above the national average.

The economic impact of concentrations of defence personnel is quite different from concentrations of defence procurement. The indirect effect of the presence of military personnel would tend to be felt in the service sector, principally in wholesale and retail trade and personal services. Defence procurement would tend to promote activity in the manufacturing sector with typically large direct and indirect effects on employment and income.

Table 14

United States Department of Defence Personnel
By State and Region
(1985)

State	Civilian	Military	Total	Percent Of Total
Maine	10,601	5,438	16,039	0.7%
New Hampshire	1,802	4,122	5,824	0.3
Vermont	606	74	680	0.0
Massachusetts	12,332	9,417	21,749	0.9
Connecticut	4,954	6,526	11,480	0.5
Rhode Island	4,715	4,037	8,752	0.4
New England			64,624	2.8
United States	976,155	1,366,866	2,343,021	100.0

Source: U. S. Department of Defence.

Table 15

DND Employment in Person Years
Atlantic Provinces and Canada
(1985-86 fiscal year)

Province	Civilian	Military	Total	Percent of Total
Newfoundland	225	897	1,122	1.0%
PEI	262	933	1,195	1.1
Nova Scotia	5,573	12,120	17,693	16.4
New Brunswick	1,373	4,192	5,565	5.2
Atlantic	7,433	18,142	25,575	23.8
Canada	33,239	74,386	107,625	100.0

Source: Department of National Defence.

Business Investment

Introduction

One of the important ingredients for growth and development within any orthodox theoretical framework is the availability of capital. Within the neo-classical perspective, lack of capital is merely a short run problem. Continuous rationalization and adjustment within industry tends to free up capital for new uses. This process is explained by Sheila Dow in a review of orthodox and radical theoretical perspectives in an article on money and regional development.

> National financial markets, if anything, make regional development more even. Financial flows between regions are in fact a key variable in the adjustment to equilibrium. Disequilibrium may be the result of an inequality of savings and investment in each region. If exports from one region are low relative to imports, there will be insufficient savings to finance investment; but the resulting excess demand for funds will be met by an inflow of funds from the other regions with high exports and thus excess savings[29].

Put a different way, low wages and high unemployment resulting from rationalization in industry or a scarcity of capital in a given region will tend to draw capital from outside the region, since both nature and capital abhor a vacuum.

The influence of general equilibrium theory can easily be seen in the developmental approach and its view that accumulation of capital is the key to industrial revolution. Keynesian theory on the other hand tends to focus on the notion that all borrowers face the same conditions but since expectations of return govern investment plans, uneven development is a possibility[30].

From this perspective, it is not a big jump to the cumulative causation approach. This methodology might maintain that, given the nature of center-periphery relationships and the fact that a combination of factors favour development in the center, a similar project would have a better return in the centre than in the periphery. Capital flows within the dependency theory framework would view the use of capital as a means to finance projects for the generation of a surplus to be eventually shipped back to the centre.

More recent Marxist theorists argue that the combination of a shift to the center and a process of corporate concentration accounts for the demise of Maritime industries at the turn of the century[31]. This is in sharp contrast to the independent branch banking system of the United States and is sometimes cited as the reason for the decline of the Atlantic region relative to the Eastern seaboard of the United States[32].

The cumulative causation approach together with other less orthodox ones highlight the concentration of head offices of financial institutions in the center regions. In

this respect, these theories agree with the regional science paradigm which emphasizes the importance of industrial structure, including concentrations of financial institutions. The relative differences in concentration of capital is another of the big differences between the Atlantic region and New England.

Venture Capital

The availability of investment capital has always been one of the main assets of the New England economy. In the early days of New England's industrialization, entrepreneurs found willing sources of capital in the extensive family wealth of the area and in the profits of merchants in the larger cities. Private sources such as these continue to represent vital sources of start-up capital.

Much of the recent success in the New England economy is related to the phenomenal growth of the venture capital industry, much of it concentrated in New England. Federal tax changes are at the root of this growth. In 1978, Congress reduced the maximum tax on capital gains and removed restrictions on the use of pension funds for venture capital[33]. In one year, new funds available for venture capital financing rose from $39 million to $600 million[34]. By 1983, the pool of venture capital had risen to $12 billion[35].

Most venture capital firms started as private organizations supported by wealthy families or individuals. The region's larger firms and more prominent universities became involved in risk-financing somewhat later. The first public venture capital firm was the American Research and Development Corporation established in 1946. One of its early successes was Digital Equipment Corporation[36].

Concentration of financial services is an important part of the explanation for growth within the regional science school of thought. Of the top 100 venture capital firms in the United States, 20 are in the New England Area and 15 of these firms are located in Massachusetts[37]. Table 16 shows that more than a fifth of venture capital commitments in 1983 were to Massachusetts and Connecticut firms alone. Table 16 also shows that venture capital

Table 16

Regional Distribution Of
Capital Commitments
(Independent Private Firms Only
as a Percent of the Total)

	1981 (%)	1982 (%)	1983 (%)	1984 (%)
California	38	45	27	36
New York	4	7	28	20
Massachusetts	12	11	13	15
Connecticut			9	6
Other	46	27	23	23
Total	100	100	100	100
Northeast	25	25	52	44
West Coast	42	48	31	37
Midwest	8	8	7	9
Southwest	16	13	5	7
Southeast	5	4	6	5
Other	4	2	0	0
Total	100	100	100	100

Source: The New England Council Inc. and Venture Economics Inc.

commitments tend to be concentrated in a few regions. While, by their nature, these firms show no geographic preference, personal contact, particularly in high risk, high technology investments, is essential. Given this concentration, some authors[38] have made the obvious inference that risk capital is more plentiful in New England simply because of the abundance of high quality opportunities. The availability of capital and the availability of marketable ideas becomes self-reinforcing.

One of the major factors in the recent growth and success of New England's high technology industries was the wide availability of risk capital. Venture capital firms are prominent in this regard because of a tendency to make more innovative investments than traditional financial Institutions. Even the so-called traditional financiers show signs of innovative techniques in the region. In the 1960's, any Massachusetts firm with a federal contract was guaranteed financing from the Bank of Boston[40]. This bank in particular sought out researchers who had patents for "marketable" technology[41]. The regions banks and venture capital companies have also, more recently, shown some interest in "zero stage" financing (opportunities looking for inventors and innovators), as opposed to "first stage" (pre-innovation), and "second stage" (inventors about to go into production)[42].

While access to capital, in general, is not a major problem in Atlantic Canada, risk capital is difficult to obtain. Few venture capital firms operate in the region,

and tax laws make it difficult to channel the wealth of local companies, pension funds, and individuals into local investments. Those firms which do exist are different from U.S. venture capital firms. American firms tend to concentrate in manufacturing and service industries related to high technology and bring ideas that have reached the innovation stage into production. Canadian venture capitalists seem more oriented to 'safe' investments in resource and commercial areas.

Some studies indicate that one of the main problems in the Atlantic region is not a lack of capital but a dearth of investment opportunities[43]. In addition, innovators and entrepreneurs often do not have the skills required to acquire financing. Often this involves the lack of a convincing or thorough business plan. These and other structural problems make it difficult for the Atlantic region to generate the type of self reinforcing feed back loop that exists in New England. The necessary industrial and financial base does not exist. It is at this stage that the entrepreneur's skill is most important and is where New England excels and Atlantic Canada appears to fall short.

Banking Systems: U.S. versus Canada

A big part of the of the financial agglomeratic.. that has played an important role in the growth of New England is the availability of banking services. While there is no doubt that the concentration of financial services in New England is a key component of growth, it may be that the nature of the banking system in the United States broadens the agglomeration affects. The United States has a banking system composed of many small independent banks, many with a strictly local orientation. While this is changing with the development of inter-state banking, a recent survey in New England Business lists 218 commercial banks in the region[44]. The top ten had assets of $90.7 billion in 1986, more than half the assets of all of Canada's chartered banks[45].

This wide availability of financial services is pointed to as one of the big reasons for New England's rapid growth compared to Atlantic Canada. Atlantic Canada has only branches of national banks[46]. Banking in Canada tends to be concentrated by location and banks are few in number. Table 17 shows the relative degree of corporate concentration in the banking sector in a variety of countries. Popular wisdom maintains that the lack of any meaningful concentration of financial services in Atlantic Canada, and the resulting difficulty in getting access to capital, is one of the big reasons for lack of development in this region. While recent bank statistics give little substance to this claim, it may be that the problem is one

Table 17

Bank and Branch Density
Various Industrialized Countries
(1982)

Country	Number	Offices	Population per Bank	Share of Deposits at Largest Five
United States	14,451	54,235	15,676	19.2%
Canada	11	7,425	2,221,636	77.7
W. Germany	243	41,000	254,156	61.8
United Kingdom	35	14,000	1,601,914	56.8
Japan	86	13,420	1,378,825	34.5
France	206	40,200	262,913	76.1
Italy	1,170	11,970	48,987	35.1
Switzerland	432	5,501	14,682	46.7

Source: Reproduced from "The New England Experiment in Interstate Banking", Richard F. Syron, in The New England Economic Review, Federal Reserve Bank of Boston, (Boston, Mar./Apr. 1984) p.6.

of lender attitudes and lack of opportunity. The self reinforcing cycle of opportunity and investment is not well developed.

The United States has a long history of populist concern about the possible abuses that might come with the concentration of economic power in a few very large financial institutions[47]. The current debate over the broadening of the U.S. system by the removal of legal barriers to inter state branch banking has raised this debate once again. Fears have been expressed about how interstate banking might affect the concentration of financial and political power, the availability and the distribution of credit, and predatory competition in the banking sector[48]. On the other side of the coin, proponents of interstate banking see it as a means to bring money from the large center banks into the hinterland. Unlike small local banks, larger financial institutions with broad access to funds would not have to rely on a local deposit base to provide loans. In addition, business and individuals could be provided with a higher level of service than presently available.

New England has become the test case for interstate banking. The experiment has not been a success. Maine alone has allowed full interstate banking. Populist concerns remain[49]. These include a feeling that borrowers may be able to get business financing more easily from their local community bank than from a branch of a larger interstate bank. Whole communities could be neglected if

acquisition leads to consolidation. Another common concern is that interstate banking may lead to an outflow of funds as larger center banks drain deposits in one region for more lucrative investments elsewhere. Feelings like these have led legislatures to enact laws like the 1979 Community Re-Investment Act, which is designed to encourage banks to be more active in financing development in their communities. Maine's interstate banking law requires an acquired bank to provide a business plan that demonstrates how the financial needs of small business and individuals will be met. In addition the acquiring bank must describe how net new funds will be brought into Maine.

Various studies have conflicted with these populist notions of the evils of concentrating and centralizing of financial power[50]. Constance Dunham, in a study prepared for the Federal Reserve Bank of Boston, suggests that small local banks may not be as positive an influence on their communities as is commonly held.

> Small banks are more locally oriented than large banks in terms of both their sources and uses of funds. However, because of their greater emphasis on individual customers, who are net suppliers of funds to the rest of the economy, small banks tend to gather more funds than they can lend locally. This, in conjunction with small banks, lack of access to money market sources of funds, leads them to invest heavily in nonlocal, highly liquid assets. As a result, small banks tend to be conduits through which local funds

> flow into nonlocal investments either directly or indirectly, through interbank and other financial markets, to the ultimate borrowers[51].

In other words, while almost all of the loan activity of a small bank is local, this represents just over half of assets. Other assets are invested outside the local area in safe liquid investments, in government bonds for example. On the other hand, local banks when they become affiliated with larger banks, tend to decrease the outflow of funds as an expanded array of services to local business becomes available[52].

The same study also shows that the focus of a bank tends to change when control shifts from local to regional banks. Inter state banks tend to provide more services resulting in an inflow of funds as the bank begins to service larger more sophisticated customers than the previous local bank attracted. Increased net inflow of funds therefore depends on a demand for those new services. With few local opportunities for these services, the expanded opportunities for non local investment would result in a net outflow. The study recognizes that: "Small businesses, no longer the sole commercial focus of these [acquired] banks, may be hurt"[53].

It is clear that the banking system in the United States has assisted the development of a solid economic base and was one of the keys to the recent resurgence of the New England economy, in particular. The effects of interstate banking proposals are unclear but seem mostly positive. The

key role of capital seems to have been in establishing the industrial base of the region. Present day formulations of the banking system may be inconsequential, having little role to play except in servicing this industrial base. The consolidating of power among banks probably has less meaning today since financial services are widely available in a variety of forms. In addition local investments have become more attractive to large banks as distribution of risk has become as important to larger banks as rates of potential return[54].

In this respect the consolidation of banking services in the Atlantic region in the 1800's is probably more relevant than the present day consolidation in New England. Work by Naylor[55] and others[56] have remarked on the negative consequences of the concentration of capital in central Canada together with the use of deposits in periphery regions to fund economic activity in the centre. Jim Frost in his article, "The Nationalization of the Bank of Nova Scotia", points to a significant net outflow of Maritime deposits in the Bank to loan activity and bond purchases outside the region after 1897[57].

A similar pattern was established for smaller community banks in the United States by Constance Dunham[58] in 1984, but the observed outflow was much less extreme and limited to liquid investments. Loans made by local banks were still almost entirely to local business and individuals. Dunham's study showed ratio of local uses to local sources for community banks of 0.6 (60 percent)[59]. A review of

regional and larger center banks showed more of an outflow in loans but some reduction in the holding of liquid assets from outside such as government bonds. This contributed to a net inflow of funds to local regions in the case of larger banks. The Dunham study showed ratio of local uses to local sources for center banks of 1.1 (110 percent)[60]. A similar pattern presently can be seen among Canada's larger banks.

It would seem reasonable to assume that differences in the banking systems of the Atlantic region accounts for some of the difference in the economic bases of the two regions. However since small banks in both areas were likely net exporters of capital during the 1800's the telling factor is the relative magnitude of the flow. New England may have benefited from a more restrictions on capital flows but this interpretation is not clear cut.

Educational Institutions

Introduction

The developmental approach to economic growth is most consistent with the consensus that New England's educational institutions played a vital role in the revitalization of the region and form an important part of the region,s industrial base. Early formulations of the developmental approach focused on the accumulation and availability of physical capital as the precursor of economic

revolution[61]. The availability of capital per worker was used as a measure of productivity and provided the explanation for the varying potential of regions or countries. The importance of capital was discussed in the previous section.

While empirical testing proved capital availability to be important to economic development, other factors such as social infrastructure - road, railways, hospitals, schools - and human capital - knowledge and skills of the indigenous work force - have come to be regarded as a more important contributors to higher productivity[62]. In fact, the rate of diffusion of technology and its contribution to productivity and growth has become has become the focus of many present day proponents of the developmental school[63].

The developmental approach can serve as a corrective to the regional science approach. However, focusing on social infrastructure ignores the problems inherent in having financially strapped governments take on costly infrastructure projects. In the case of New England, relative differences among regions in human capital and the key role of the solid core of highly regarded educational institutions adept at putting technology into action, are often pointed to as two of the basic elements of economic growth and resurgence in New England. Researchers have established a definite link between the economic resurgence of this region, the supply of highly skilled and professional labour, and technological transfer from

research and development programs at the region's schools and institutes[64]. The absence of a similar base is often mentioned as one of the problems at the crux of disparities between the Atlantic region and the rest of Canada.

Labour Force Quality

The average level of educational attainment of a population, according to the developmental paradigm of economic growth, reflects on the quality of the labour force. Education levels in New England are generally higher than the U.S. average. Table 18 shows that almost 35 percent of New England's population, 25 years and older had completed some years of university in 1982. This compares favorably with the U.S. average of 32 percent. There are some variations within the region, with both Maine and Rhode Island below the national average.

The region's 264 colleges and universities attract more than 700,000 students in a typical year[65]. New England has ranked first in the U.S. in enrollment per 1,000 population of science and engineering graduate students in

Table 18

Years of School Completed
By Region, and State
(Percent)
(1980)

	United States	New England	Maine	N. H.	Ver.	Mass.	R.I.	Conn.
Elementary 8 years or less	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
High School 1-3 years	81.7	84.3	83.4	85.3	83.3	85.6	79.3	83.7
4 years	66.5	70.5	68.7	72.3	71.0	72.2	61.1	70.3
College 1-3 years	31.9	34.6	29.4	35.1	34.7	35.8	28.3	35.9
4 or more	16.2	19.2	14.4	18.2	19.0	20.0	15.4	20.7

Source: National Centre for Educational Statistics.

doctorate-granting institutions[66]. These numbered some 30,119 individuals in 1985, an increase over 1980 of almost 15 percent[67]. The regions universities and institutes are important in meeting the demand for the highly trained work force demanded by a high technology based economy. They are also a source of entrepreneurs.

The kingpin of this educational base is the Massachusetts Institute of Technology. Thanks largely to this prestigious school, New England has become a net importer of brain power. Massachusetts in particular has benefited from this phenomenon. While only 15 percent of undergraduates at MIT are from New England, over 30 percent of its graduates remain in Massachusetts[68].

The Atlantic region does not compare favorably with New England or the rest of Canada in terms of educational attainment. Table 19 shows that all provinces with the exception of Nova Scotia have levels below the national average. Some provinces in the region have a high proportion of their populations attending university at any one time but there seems to be a drain of graduates from the province after graduation[69]. This would seem to be consistent with the cumulative causation theories of underdevelopment. The problem may be a lack of demand in the region for university trained people. There appears to be no problem on the supply side.

Table 19

Percentage Distribution of Population 15 Years and Older
By highest Level of Schooling
Atlantic Provinces and Canada
(Percent)
(1981)

	Nfld.	P.E.I.	N.S.	N.B.	Canada
Elementary and Secondary					
0-8 years	30.1	23.5	20.3	27.9	20.1
9 complete	28.9	31.4	33.9	28.8	27.9
Vocational Cert. or Dep.	2.1	2.6	3.5	2.8	3.4
High School Certificate	10.2	8.3	7.9	10.9	13.0
Other Non-university					
No trade cert. or diploma	3.0	4.5	3.7	3.5	6.0
With trade cert. or dep.	9.9	7.6	9.4	6.5	6.5
Other	3.4	6.1	5.8	6.2	7.2
University					
no degree	7.4	9.9	8.0	7.3	7.9
With degree	4.7	6.1	7.4	6.1	8.0

Source: Statistics Canada.

Table 20

Enrollment in Post-Secondary Institutions
As a Percent of the Population by Age Group
and By Province

	Nfld.	P.E.I.	N.S.	N.B.	Canada
Percent of Pop. Enrolled in Full-time Post-Secondary Education					
Age 18	18.4	18.4	20.8	20.8	21.3
Age 20	12.5	20.7	23.0	17.9	22.1
Age 24	3.0	3.5	6.4	4.2	6.0

Source: Statistics Canada Cat. 81-229.

Innovative Environment

Aside from their important role as purveyors of human capital, universities and technical institutes can play important roles as centers of research, innovation, and entrepreneurship. Post-secondary institutions also act as an important source of advice and a storehouse of knowledge. The key to the success of New England is the ability of the major educational institutions in the region to master the transition from invention to innovation. The process of innovation and the role of the entrepreneur are not dealt with adequately within the regional science or the development schools. The process is addressed by Schumpeterian analysis. Despite the difficulty of assigning a theoretical framework, entrepreneurs appear to be the key to the process of growth. The academic base as it exists in New England, and at MIT in particular, seem to be one that encourages entrepreneurship and innovation.

With 264 colleges and universities and close to a million university students, New England is by far the most knowledge intensive region of the United States. This large base of highly trained academics and students has fostered considerable research and development activity that has spun off into industry applications and new start-up companies. Universities usually do not foster spin-off activity. Certain institutions in New England, such as MIT and Brown University, are unique in this respect (Figure 4).

Spin-offs are encouraged through direct links with the country largest corporations and through military research and contract activity. Table 21 shows the extent of military funded research in New England institutions during 1985. Table 22 shows the extent of the research and development base by state. While the private sector is important in funding university research, Table 23 shows that the federal government plays a dominant role, in New England in particular. Universities themselves sometimes take part in providing venture capital and incubator facilities which offer low-cost space for start-up companies. In addition the significant endowments of private institutions, Table 24, are big source of research dollars. The top eighteen endowments in New England represent a quarter of the endowments of the top 100 in the nation.

Another unique aspect of the New England experience is an apparent willingness of university administrations to allow privatization of university research without excessive red tape to insure pay back. For example, professors at MIT can spend one day a week on outside business, a privilege that other universities are still trying to sort out. "MIT's professors have always moonlighted for industry with the school's blessing and encouragement[71]. Hundreds of companies have been created by graduates of MIT.

Table 21

Department of Defence
Research and Development Contracts
To Colleges, Universities and Nonprofit
Organizations in New England
(dollars)
(1985)

College or University	Award
Massachusetts Institute of Technology	360,104,000
University of Massachusetts	6,141,000
Yale University	5,507,000
Harvard University	4,637,000
Trustees of Brown University	3,691,000
Brown University	3,530,000
University of Rhode Island	3,413,000
Wentworth Institute of Technology	3,199,000
Northeastern University	2,476,000
Emmanuel College	2,436,000
University of Connecticut Foundation	1,364,000
Dartmouth College	1,152,000
Trustees of Boston College	1,048,000
University of Lowell	650,000
Total	399,330,000
Nonprofit Research Institute	
Charles S. Draper Laboratory	305,238,000
Mitre Corporation	260,995,000
Woods Hole Oceanographic Institute	11,548,000
Total	577,781,000
Total For All Institutions	977,111,000

Source: New England Board of Higher Education, "Analysis of U.S. Defence Department Data", Chronicle of Higher Education, (June 16,1986).

Table 22

Research and Development Expenditures
At Doctorate-Granting Institutions
In New England
(thousands of dollars)
(1985)

State	Expenditures	National Rank
Connecticut	188,647	15
Massachusetts	583,056	4
Rhode Island	56,597	35
Maine	20,621	47
New Hampshire	38,043	39
Vermont	27,606	43
New England	914,570	
United States	9,351,885	

Source: National Science Foundation, Academic Science/Engineering and R & D Funds 1985, (Nov. 1986).

Table 23

Percent Distribution of
Research and Development Expenditures
At Doctorate-Granting Institutions
By source of Fund and State
(1985)

Source	United States	New England	Maine	N. H.	Ver.	Mass.	R.I.	Conn.
Federal Gov.	63.1	74.2	51.7	68.9	68.7	76.6	76.4	70.1
State, Local	7.0	1.6	6.0	7.0	5.7	0.8	1.5	1.9
Industry	5.7	7.2	7.6	5.4	9.5	8.5	6.0	3.3
Inst. Funds	16.9	8.2	23.1	16.7	12.6	4.7	9.3	14.7
Other	7.4	8.9	11.7	2.1	3.6	9.4	6.9	9.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: National Science Foundation, Academic Science/Engineering and R & D Funds 1985, (Nov. 1986).

Table 24

The Top Ten Endowments of Educational Institutions
In New England as of January 1986 (1)
(dollars)

Institution	Endowment
Harvard	3,260,200,000
Yale University	1,449,443,000
Massachusetts Institute of Technology	842,392,000
Dartmouth College	460,200.000
Brown University	272,700,000
Smith College	232,875,000
Wellesley College	230,000,000
Wesleyan University	230,000,000
Williams College	214,500,000
Amherst College	186,000,000

(1) The total endowment of the top ninety independent institutions in New England amounted to $9.2 billion as of January 1986.

Source: The New England Board of Higher Education, "Facts About Colleges, Universities, and Institutes 1987".

Table 25

Research and Development Expenditures
Expenditures In Canadian Higher Education Institutions
By Source of Funding
(millions of dollars)
(1984)

	Nfld.	P.E.I.	N.S.	N.B.	Canada	Atl./Can.
Federal Gov.	9		21	7	462	8.0%
Provincial Gov.	1		1		120	1.7%
Industry	1				36	2.8%
Institutions	4	1	13	6	270	8.8%
Non-Profit Organizations	3		2	2	126	5.6%
Foreign			1		11	9.1%
Total	18	1	38	15	1,025	7.0%

Source: Statistics Canada.

"Starting a business became not just acceptable, but almost expected of a bright graduate student in electrical engineering"[71]. This attitude, although prevalent in New England, is uncommon in the United States and Canada.

Links between corporations, entrepreneurs, universities and financial institutions are very important. An early example of this type of linkage to promote innovation was the special relationship between the Bank of Boston and MIT in the 1950's and 1960's. During the 1950's, this bank, made a commitment along with a number of other organizations including MIT, to help promote the growth of knowledge-based firms in Massachusetts[72]. Recognizing the essential linkage between invention (pure science) and entrepreneurs (small and large business and individuals) necessary for innovation has taken time in Canadian universities. Several universities have established various formal or non formal entities to translate research into innovative products and monitor the needs of industry. Memorial University of Newfoundland established a university based corporation, Seabright Resources, with the aid of federal and provincial funding for the development of university-industry links and the promotion of innovation. Dalhousie University was to have developed the "Dalhousie University Development Corporation", in the early 1980's, but plans have been delayed. Other institutions in the region have made similar attempts but success, so far, has been limited.

Economic Rationalization and Adjustment

Introduction

While neo-classical economic analysis is not generally considered a theory of regional growth, it does mark the parameters for most orthodox theories of regional development. This view assumes that prices and wages are flexible, and that labour and capital are mobile, and given similar resources and technology, market forces, which tend to equilibrium, will solve regional problems if they are allowed to work unhindered. Unemployment and low wages are the result of excess supply or too little demand, a problem that is conveniently solved by emigration.

One regional formulation of neo-classical theory has been proposed by Tom Courchene[73]. The focus of this view is that governments, by their interference in the economy, worsen rather than lessen disparities and that government policies would encourage rather than discourage labour and capital mobility. Courchene advocates a active role for government in facilitating adjustment to equilibrium, resulting in increased efficiency as low productivity workers in depressed area move, with assistance if necessary, to high productivity jobs in other areas. Unemployment rates would come down and incomes would go up through factor price equalization.

The New England miracle is comfortably explained within the confines of neo-classical economics. New England, like much of the United States, seems to be governed by pure market forces to a larger extent than Canada. In other words, wages and prices are reasonably flexible, both capital and labour are fairly mobile, and economic problems tend to solve themselves as divergent economies move to equilibrium.

In practical terms this means that the present day growth in New England is related to the adjustments that were made during troubled times twenty or thirty years ago. When traditional industries went into decline, the major form of adjustment was emigration. In theory the departure of the jobless to more prosperous regions of the nation will simultaneously raise incomes in the area of emigration while lowering incomes at the destination. This would have improved the relative availability of capital and resources per person. Unemployment would ease with outmigration while temporary surplus of labour and lower wages would draw capital and investment. The New England success story in a "nut shell".

Problems in Atlantic Canada can be related, within the neo-classical paradigm, to a failure to adjust, particularly in an outmoded low productivity manufacturing sector. Failure to adjust can be related to market imperfections institutionalized by governments, through unemployment insurance for example, and by unions.

Certain authors have taken exception to this view. Boadway and Flatters[74] point out that certain market imperfections and the resulting emigration may lower net productivity in a national economy. Batra and Scully[75] demonstrate that if one region has a technological advantage over another workers and capital migrate to this high wage region thus preventing adjustment. Within this broad paradigm, however, it does appear that market imperfections of a variety of types have prevented adjustment in the Atlantic region.

On the other hand, the adjustment process in New England over the second half of this decade would indicate the existence of a market fairly free of imperfections in New England. Clearly things are not this simple. The broad overview of regional growth theory together with the empirical evidence of consensus growth factors show that many other factors, such as government policy and availability of capital, come into play. The actual explanations of growth are considerably less tidy than the general equilibrium paradigm would suggest.

Rationalization In The Manufacturing Sector

The Process of Adjustment

New England's manufacturing sector was and continues to be heavily represented in so-called mature or declining industries. During the 1950's, 1960's and early 1970's,

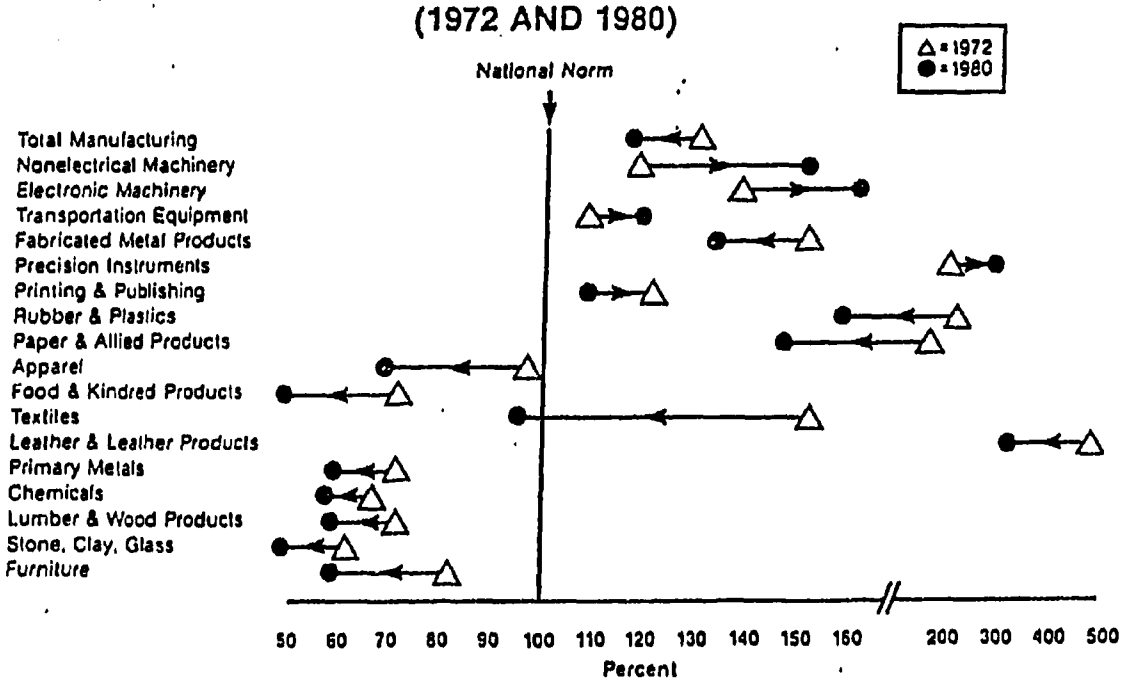
hundreds of plants closed and hundreds of thousands of jobs were lost in industries such as leather, textiles, apparel, rubber and plastic, and paper products[76]. These mature industries are marked by a number of similar characteristics such as low wages and susceptibility to cyclical downturns, remarkably similar to large portions of Atlantic Canada's resource based economy. The severity of the downturn in New England after 1950 was eased somewhat by growth in the service sector and a buildup of defence related manufacturing during the Vietnam War. With cuts to defence spending at the end of the War, the underlying weakness of New England's manufacturing base began to be felt. By 1975 unemployment rates were two percent above the national average and the outlook for the 1980's was dim.

Adjustment took the form of labour migration, as displaced workers sought jobs elsewhere, often in the southern United States where many firms relocated to take advantage of lower average wages and more pliable labour. High unemployment and emigration served to keep New England's wages under control. Figure 9 shows the nature of adjustment in manufacturing employment through most of the 1970's. Despite emigration it appears that a base of trained workers were available for the high technology boom that began in the mid-1970's. It would seem that the decline in mature industries and the resulting adjustment process was a big factor in the New England's strong resurgence by freeing up labour and capital at precisely the appropriate time.

Low unemployment rates of the 1980's have come as a result of very strong job creation in manufacturing from 1974 through 1984, growth in service sector employment in line with national trends, and very slow growth in the region's labour force (half the national rate). Slow labour

Figure 9

PROPORTION OF NEW ENGLAND'S LABOR FORCE IN MANUFACTURING RELATIVE TO THE NATIONAL NORM (1972 AND 1980)



SOURCE: Data Resources, Inc.

force growth is the result of continued outmigration from the old industrial areas of New England as outmoded plants in traditional industries continue to close, and low birth rates, a sign of an affluent society. Slow labour force growth has persisted despite some of the highest participation rates for women and minorities in the United States[77].

A similar pattern of adjustment was is not apparent in Atlantic Canada. Neo-classical theory would place the blame on a lack of flexibility in labour, capital, and other markets compared to New England. It would appear, however, from Appendix C, that there have been significant levels of adjustment/emigration in the provinces of the Atlantic region through much of the twentieth century. The main exception is the period 1971-1981 when it would appear, with the exception of Newfoundland, that the Atlantic provinces were the beneficiary of net emigration. Table 26 shows that this was a time when manufacturing employment grew at a pace significantly faster in the Atlantic region than in the nation.

It would appear that despite in-migrants labour force growth over the period was only 34.1 percent compared to 41.8 percent for the nation. It might be postulated, consistent with the transfer dependence paradigm, that market imperfections reduced the level of adjustment that could have otherwise been expected. Employment growth could not keep pace with labour force expansion due to a lack of adjustment/emigration.

Table 26

Growth in Total Manufacturing Employment
Atlantic Provinces and Canada
(1961, 1971, 1981)

	NFLD	PEI	NS	NB	ATL	CAN
1961	9,854	1,681	27,822	22,932	62,289	1,352,605
1971	12,580	2,290	31,958	28,565	75,393	1,628,404
1981	18,210	3,041	38,807	31,511	91,569	1,853,726
Annual Average Percent Change						
61/71	2.5	3.1	1.4	2.2	1.9	1.9
71/81	3.8	2.9	2.0	1.0	2.0	1.3
61/81	3.1	3.0	1.7	1.6	1.9	1.6

Source: Statistics Canada, Catalogue 31-203.

This case seems some what suspect however. It must be remembered that the early 1980's marked the beginning of a prolonged recession through which traditional migration patterns were reversed. Lack of demand for labour in the traditional hot spots in the Canadian economy led to significant levels of return migration to the Atlantic region. By the mid 1980's patterns were back to their normal pre-1970 pattern of emigration.

Differences in the industrial base and basic demographics are main reasons for differences in the adjustment patterns in New England and Atlantic Canada. It appears from figures 5 and 6 and our earlier review off historic growth patterns, that much of the adjustment in mature industries in Atlantic Canada took place 50 or 60 years ago. What remains is a cyclical and slow growing, resource-based, manufacturing sector(Figures 5,6 and 8).

Barriers to Adjustment

In addition to the differences in economic base, other factors have been suggested as preventing adjustment in Atlantic Canada in the manner of New England. These are consistent with neo-classical theory, specifically the transfer dependence paradigm. Labour market imperfections highlighted by differences in the social safety net of the two countries and rate of unionization are paramount.

Lack of immigration related to the richness of unemployment insurance programs in Canada are sometimes accused of preventing adjustment in the Atlantic region. The U.S. system, by comparison, is less generous. The unemployment insurance system in the United States is operated by individual states funded for the most part by a federal payroll tax on employers. Some states supplement this with an additional tax on employers. This state tax sometimes varies from company to company, as in the case of Maine, depending on the use employees of a particular company make of the system (seasonal employers pay more). In Canada, the system is funded by contribution from employers and employees, with any deficit covered by the federal government.

Maximum weekly benefits tend to be larger in Canada. The maximum payment in Maine, fairly representative of New England, was $ 152 (U.S.). By comparison, the maximum in Canada in 1986 was $297 (Can.) or $ 214 (U.S.). However, Table 27 shows that the average weekly payments are quite similar in Canada and the United States. In fact, the U.S. in general, along with two states in New England are more generous when payments are expressed in American dollars. Benefits are easier to qualify for in Atlantic Canada than in New England as a general rule and eligibility is extended to those on sickness or maternity benefits, fishermen and so

Table 27

Average Weekly Unemployment Insurance Benefits
For New England and Canada
(U.S. dollars)
(1985)

	Average Weekly Benefits
Connecticut	127
Maine	116
Massachusetts	139
New Hampshire	106
Rhode Island	122
Vermont	119
United States	127
Canada	125
Canada (1986)	130

Source: Annual Report of the U.S. Secretary of Labour, Statistics Canada, Bank of Canada.

on[78]. Extended benefits provisions make it possible to collect benefits for up to 50 weeks in Canada versus about half that in the United States. Since Canadian employers are not penalized for seasonal employment practices the unemployment insurance system in Canada probably encourages this type of behavior.

These differences between the two systems would be seen within the neo-classical framework as evidence of significant barriers to adjustment in the case of Atlantic Canada. However studies reviewing the impact of liberalization of the Canadian unemployment insurance system after 1971 point to a maximum increase in the unemployment rate of 1.5 percent[79]. Given the ten percent differential between unemployment rates in New England and Atlantic Canada, it appears that the unemployment insurance system is not a significant barrier to adjustment. New England bears no lessons in this respect for Atlantic Canada.

The proposition that high levels of unionization within a workforce hampers mobility of labour and prevents the price of labour from adjusting to demand represents another disruption of market forces within the neo-classical prospective. Table 28 suggests that New England is in a better position than Atlantic Canada in this regard. However, two thirds of states in the United States have rates of unionization lower than the New England's. The American average is skewed by highly industrialised states in the northeast[80]. In addition, nineteen states had

Table 28

Extent of Union Membership
In New England, Atlantic Canada,
United States and Canada
(Percent)
(1980-81)

	Percent of Payed Workers in Unions
Newfoundland	49.6
Prince Edward Island	30.0
Nova Scotia	29.5
New Brunswick	32.3
Atlantic Canada	34.8
Canada	32.9
Maine	24.2
New Hampshire	15.8
Vermont	18.0
Massachusetts	24.9
Rhode Island	28.4
Connecticut	22.9
New England	23.7
United States	25.2

Source: Statistics Canada, U.S. Bureau of Labour Statistics.

right-to-work legislation in 1980 and none of these were in New England[81]. While union membership may prevent adjustment to some extent, New England's relative disadvantage in this respect does not seem to have harmed its progress in recent years.

Wages and Salaries

In economic theory, when demand for labour falls off, so do relative wages if labour markets are free to adjust to changing conditions. This seems to have been the pattern in New England, where hourly wages relative to the American average fell during most of the 1970's. Wages in manufacturing production had fallen to 87 percent of the national average by 1976[82]. Wages have begun to climb in recent years due to tight labour markets resulting from slow labour force growth, high demand, and the lowest unemployment rate of any region in the United States. Table 29 provides an overview of relative wage structures in the United States.

High participation rates and increasing wage levels have seen income per person jump to 117 percent of the national average in 1987[83]. This is up from 111 percent in 1983 and 103 percent in 1978. The relatively high per

Table 29

Average Hourly Earnings of Manufacturing Production Workers In Selected States Relative to the U.S. Average (percent)

	1973	1975	1977	1979	1982	1985
New England						
Connecticut	101.2	99.0	97.9	96.0	96.8	100.5
Massachusetts	95.1	92.8	90.3	89.3	89.2	94.5
New Hampshire	82.9	82.2	80.3	80.1	81.8	87.8
Rhode Island	82.4	79.5	77.3	76.1	77.8	79.7
Mid Atlantic						
New Jersey	104.2	103.3	102.5	100.2	102.3	101.6
New York	102.7	101.7	99.8	98.1	98.2	104.0
Pennsylvania	101.7	103.1	103.0	104.0	101.5	100.5
East North Central						
North Carolina	73.1	72.8	72.2	72.7	74.7	76.6
South Carolina	74.1	74.3	75.4	76.1	78.6	84.2
Virginia	81.7	82.6	82.6	83.3	86.6	89.5
West South Central						
Arkansas	73.1	76.4	75.7	77.5	78.7	79.7
Texas			95.4	96.4	101.2	98.8

Source: U.S. Dept. of Labour

capita income in New England is another difference between it and the Atlantic region. Per capita personal incomes in the Atlantic region declined from 74.9 percent to 74.8 percent of the national average from 1979 to 1983[84]. While improvements have been observed, these relate more to growth in government transfers to individuals than gains in earned income. The Atlantic region and New England are being drawn in opposite directions in terms of hourly earnings and income per person. From this perspective, it would seem that the transfer dependence perspective has some validity.

The Atlantic region also has a history of hourly wages significantly below the national average, Table 30. Convergence on a national average wage rate has not been observed. If anything the gap is becoming wider. This reflects a lack of adjustment in the neo-classical sense, and provides some evidence that other factors are at play. Lack of adjustment due to poorly functioning labour markets may be part of the problem. However, it appears low wages alone will not spur industrial development. Other factors are clearly involved since barriers to adjustment, various labour market imperfections, tend to slow and not stop the adjustment process. For example, high average skill levels and a relatively stable labour force also contribute to New England's comparative advantage. Growth in Atlantic Canada and New England is explained only part by neo-classical theory.

Table 30

Average Hourly Earnings of Manufacturing Production Workers By Province, Relative to the Canadian Average. (percent)

	1978	1980	1985 (1)
Atlantic			
Newfoundland	92.5	90.1	86.9
Prince E. ard Island			61.9
Nova Scotia	88.2	88.4	88.1
New Brunswick	91.2	90.5	87.8
Central			
Quebec	90.9	92.1	94.1
Ontario	100.8	99.8	100.3
West			
Manitoba	87.9	87.9	85.9
Saskatchewan	106.7	107.2	100.3
Alberta	109.1	112.4	106.5
British Columbia	130.8	132.1	129.5

1) April

Note: Data for hours and earnings refer to hourly rated wage earners on manufacturing payrolls only.

Data for 1985 may not be strictly comparable to previous years.

Source: Statistics Canada

Business Environment

Taxation

The tax advantages of living and working in some of New England's states are often pointed to as a big factor in the recent growth record of this region. New Hampshire and Connecticut after all have no personal income tax and Massachusetts, once called "Taxachusetts", had one of the lowest revenue burdens (the revenues collected by state and local governments measured as a percentage of residents' personal income) in the United States in 1986[85]. The evidence suggesting that low taxes are at the root of growth is not convincing, however. The question well might be asked: What came first, rapid growth or lower taxes?

Table 31 shows that while some New England states have lower rates of corporate tax than others, the region as a whole compared poorly with other states. With respect to personal taxes, the tax burden in New England is low, compared to adjacent states in the Northeast, but more favourable tax environments can be found in the southern and western region. Table 32 shows state personal effective income tax rates for New England. Rates for four of the six New England states were higher than the national average in 1983.

Table 31

State Business Taxes (1)
(Percent of Net Business Income Given to Taxes)
(U.S. Rank in Parentheses)
(1977)

Region	All Business		Manufacturing	
	%		%	
Maine	9.1	(13)	10.8	(13)
New Hampshire	9.4	(11)	13.1	(10)
Vermont	9.8	(10)	15.5	(5)
Massachusetts	11.2	(4)	14.6	(9)
Rhode Island	11.0	(5)	14.6	(8)
Connecticut	10.7	(6)	20.1	(3)
New England	10.2	(1)	14.1	(1)
Middle Atlantic	9.5	(2)	11.7	(3)
East North Central	7.8	(4)	9.8	(4)
West North Central	6.5	(7)	5.5	(7)
South Atlantic	5.7	(8)	5.8	(6)
East South Central	5.6	(9)	3.8	(8)
West South Central	6.8	(6)	3.6	(9)
Mountain	7.2	(5)	8.3	(5)
Pacific	8.7	(3)	11.8	(2)
United States	7.7		7.9	

(1) Includes income, payroll, property, severance and other miscellaneous taxes.

Source: W.C. Weaton. Interstate Differences in the level of Business Taxation", National Tax Journal, Vol.36 No. 1, (1983) p.83-94.

Table 32

Individual Income Taxes
As a Percent of Personal Income

	1972	1977	1980	1982	1983	Rate Change 72/83
Maine	0.7	1.2	1.7	2.0	2.1	1.4
New Hampshire	0.2	0.1	0.1	0.2	0.2	0.0
Vermont	2.5	2.5	2.1	2.3	2.2	-0.3
Massachusetts	2.6	2.8	3.2	3.3	3.3	0.7
Rhode Island	1.5	1.6	1.8	2.1	2.4	0.9
Connecticut	0.4	0.2	0.3	0.3	0.3	-0.1
All States	1.6	1.7	1.7	1.8	1.8	0.2

Source: The New England Council, Inc.

Lower tax burdens in Massachusetts in the mid-1980's are related to tax roll-backs[86] while rapid growth in personal and corporate incomes kept revenues rolling in. Table 33 shows that taxes payed per person in New England were higher than in most regions of the country.

Tax competitiveness appears to be more a preoccupation of legislatures than a comparative advantage. Evidence suggests that state and local taxes exert only a minor role in the location decisions of firms[86]. Other factors such as wage rates, market access, resource endowment, economic base, and so on, are more critical.

This situation similar in some respects to the Atlantic region where both personal and corporate taxes are among the highest in the nation, Table 34. However, The Atlantic region has lacked the rapid growth necessary to lower taxes.

Table 33

Taxes Paid Per Person
By State and Region
(dollars)
(1985)

	Total	Personal Income Tax	Corporate Income Tax
Maine	863	255	46
New Hampshire	435	24	95
Vermont	858	271	65
Massachusetts	1,137	543	146
Rhode Island	890	73	25
Connecticut	1,102	92	154
New England	1,017	332	126
Middle Atlantic	1,039	402	100
East North Central	864	282	75
West North Central	848	291	57
South Atlantic	791	228	56
East South Central	711	120	24
West South Central	759	65	20
Mountain	869	193	41
Pacific	1,107	357	116
United States	900	267	74

Source: U. S. Dept. of Commerce.

Table 34

Provincial Tax Rates
(percent)
(1983)

	Corporation Income Tax (a)	Personal Income Tax (% of Fed. Tax)	Retail Sales Tax
Newfoundland	12/16	60.0	12
Prince Edward Island	10(b)	52.5	10
Nova Scotia	10/15	56.5	10
New Brunswick	9/14	58.0	10
Quebec	3/5.5/13	(c)	9
Ontario	0/14/15	49.2	7
Manitoba	10/16	54.0	6
Saskatchewan	10/14	51.0	5
Alberta	5/11	38.5	0
British Columbia	8/16	44.0	7

Notes.

a) Federal tax credit is 10% of corporate tax base

b) All provinces except PEI levy differential corporate income tax rates on small business and others: Quebec and Ontario also levy a third and higher rate on Corporations not in manufacturing or processing, farming or the extractive industries.

C) Quebec's rates under its own schedule range from 13% to 33% of taxable income subject to a tax reduction of 3% of tax payable.

Source: Canada Tax Foundation.

Innovation

Introduction

Many of the factors which explain the recent success of the New England region are best explained within the neo-Schumpeterian paradigm. This approach is based on the study of innovation policies has been called the "systemic approach", a term which reflects its focus on 'process'. This process involves intensive interactions of all elements of society with special roles for entrepreneurs, technology and governments in the innovation process[88]. In addition, since the paradigm is highly practical in its approach, focusing on case studies as the appropriate method of analysis, it has a strong policy orientation.

The systemic approach is most properly described as being in a "pre-paradigmatic" stage of its development[89]. While some aspects of the innovative process and the role of entrepreneurs and technical change are understood, the way these factors along with a variety of structural, institutional, socio-political and cultural factors interlink to produce technological change and innovation is not well defined. It may be that the complex interaction of the various factors together with interdisciplinary nature of its proponents, will combine to defy vigorous testing and the molding of acceptable theoretical parameters.

While identified with Schumpeter, due to the strong focus on the innovative process and the role of technology and entrepreneurship, this paradigm is easily linked to the

post-Keynesian approach. In contrast to the neo-classical approach which distributes income according to the marginal productivity of factor inputs, post-Keynesian theorists maintain that income shares are determined by social and political institutions. The future is not predictable in the exact sense of the orthodox theorist. Its focus is to explain the real world as observed empirically. Economies do not tend to equilibrium and governments have a significant role to play in distributing growth.

Much woolliness has surrounded the concept of technology in orthodox economics. Changing technology is seen as shifting production possibility curves, rather than an influence on the factors and institutions of production. It is seen as embodied in the capital stock figure and since it acts over a long period of time it is considered to be exogenous in most production functions. Technology in the systemic world has a broader definition which includes not only improvement in capital equipment but new techniques of organization, marketing and management.

Some insight is gained into the role of technology in the innovation process by a review of product life cycle theory[90]. This school of thought, which draws on orthodox trade theory, sees three distinct stages of growth in the life cycle of a product - innovation, growth, and standardization phase. The theory also recognizes the inevitability of a stagnation phase. The innovation phase, the introduction of a new good or service, demands ongoing research and development, product adjustments and testing,

is high cost and high risk, and is relatively labour intensive. Initial production is for a narrow region or market. For this reason, innovation usually takes place in a technology-rich area usually close to the home base of the firm involved.

The growth phase evolves from an upswing in demand from outside the immediate area and leads to the use of process technology, usually capital intensive, to meet new demands efficiently. Standardization means lowest cost production, involving large scale production, to take advantage of scale economies, and peripheral locations, to take advantage of low labour costs. Thus each phase of the cycle can have a different spatial orientation.

The relevance of this pattern to the pattern of growth in New England is clear. Innovation was the result of the activities of entrepreneurs making use of technological breakthroughs made at the various universities, institutions and companies, within the confines of the supportive network of the local research community. Aided by availability of capital for risky innovations, entrepreneurs took advantage of low local labour costs within New England to meet initial demand by building plants locally, the standardization phase. As the innovation aged and the technology that spawned it became more readily available, local innovative companies, now grown large, looked to cheaper locations and more favourable business environments to stay price

competitive. Sometimes this meant leaving the state of Massachusetts for New Hampshire, sometimes it meant leaving the U.S.

The key to New England's success is the building of innovation on innovation. The macroeconomic trend is therefore derived by the sum of the actions and decisions made by all the actors in the economy. It is the pace of innovation which gives life to the New England economy. The innovation phase is the phase of highest employment creation, the phase that is most labour intensive. The Atlantic region, on the other hand, seems far removed from the development based on innovation. Potential for job creation is limited by the resource nature of the Atlantic economy and poor integration of the main sectors of the economy.

The neo-Schumpeterian approach sees technology wielded by the entrepreneur as the agent of economic change. This focus on the entrepreneur sometimes manifests itself in a conflict between free market and interventionist ideologies. However, in reality bureaucracy and red tape are not limited to the public sector. Private bureaucracy is often just as stifling. This is no to say that public policy designed to remedy distortions will not sometimes create new problems that are more serious. After all, the public sector is not a uniform entity but consists of many parts which make decisions based on an incomplete perception of the whole and a healthy level of institutional self

interest. Conflicting and even harmful policies can be the result. Policies are confined by these institutional factors.

Entrepreneurship

Within the systemic paradigm, growth is based on innovation, particularly innovation by entrepreneurs. There appears to be significant variation in geographic concentration of entrepreneurs, depending on the fertility of the entrepreneurial environment. A fertile environment may include; good access to information and expertise, high rate of entrepreneurial start-ups and failures, and a technical culture adapted to a specific type of innovation.

Entrepreneurs do not thrive in an environment dominated by bureaucracy. While this perception often leads to a conflict between free market and interventionist ideologies, bureaucracy is, within this approach, recognized as collection of limiting structural and institutionalized rigidities which reduce efficiency. Bureaucracy is not limited to public or private legal status[90]. Corporate bureaucracy can limit innovation in the same way as

government red tape. Government policy has the potential to either limit or encourage innovation where the private sector can not or will not take the lead.

Definitions of the role of an entrepreneur in an economy are numerous and notoriously broad. One that is appropriate to this paradime is offered by Sweeney.

> An entrepreneur then is someone who by a combination of knowledge, skills, creativity, imagination and intuition perceives an opportunity in the market for a new product or service and who, spurred by events and feelings, makes the decision to invest in this opportunity by founding a new firm and by organising this firm to survive and grow. Whether the opportunity is a technological innovation, a new use of existing technology, a creative design or a new way of satisfying user needs, the entry of the new firm creates change in the market. The entrepreneurial event is the dynamic of growth[91].

Most observers of the New England rapid growth experience identify entrepreneurial spirit as a key factor in the region's economic performance[92]. The focus on risk taking seems to be a phenomenon just as associated with culture and confidence as with technology or capital. A study by Professor Edward Roberts of MIT demonstrated that entrepreneurs usually share similar family backgrounds, motivations, and educational attainment[93]. The concentration of entrepreneurial talent in New England seems to be related to a long history of innovation and the

presence of quality research institutions. New England's role as the 'workshop of the new world' left its mark on the region's mentality. The technical culture of the region seems to be one of innovation and adaptation, innovation built on traditional skills and adaptation drawn from a history of success.

Another factor in the high rate of entrepreneurship in the region is the presence of top quality universities and research institutions. These institutions tend to attract top quality students and teachers who tend to remain in New England[94]. Institutions in New England, MIT in particular, have a history of encouraging entrepreneurship. "The culture of these schools is geared to going out and doing, working in the private sector, finding commercial applications for research and starting a business of one's own"[95]. Previous sections have already describes how a host of companies have spun off research which began at MIT. Companies started by former employees of other companies, are also very much in evidence in New England.

Entrepreneurs also need the cross-fertilization of talent and ideas that come from an existing base of similar companies and sympathetic universities. The existence of a substantial and long-standing business infrastructure is key to entrepreneurial growth. The knowledge intensive nature of New England is a vital component of its entrepreneurial based growth.

The geographic concentration of entrepreneurs has clear implications for the relative pace of economic growth. The innovation phase of the product cycle is the most vibrant. Employment is created more rapidly at this stage than any other. A region which has a high degree of innovation relative to the other more stable often capital intensive stages of product development can be expected to experience rapid growth in incomes and employment. A study conducted by the Bank of Boston provides some empirical evidence of this[96]. This study showed that growth is high in the early years of high-technology firms, but slows as these companies mature. The study revealed that jobs at mature companies increased at a rate of 1.9 percent between 1945 and 1974, but by 10.8 percent for innovative companies and 40.7 percent for new high-technology companies.

The Atlantic region, on the other hand, lacks the same type of entrepreneurial base. Efforts at establishing links between universities and industry, with a few exceptions, have taken place only recently and are still underdeveloped. Government policy has been focused on attracting industries producing products in the maturity phase where low labour costs and capital intensity are the main characteristics. Subsidies of capital equipment end up as the main tool of government policy. Figure 6 shows that spin-off activity is rare in the industrial sector in Atlantic Canada, while successful entrepreneurial efforts are often the subject of outside acquisition.

Research and Development

New England has a large research and development infrastructure. The U.S. federal government provides substantial funding and such expenditures have continued to increase during the past number of years as shown in Table 35. By 1985, U.S. federal research and development expenditures in New England were $4.5 billion U.S., which is comparable to current annual research and development in Canada from all sources once the exchange is taken into account. Corporations added at least another $10 billion U.S. to New England research and development commitments in 1985. Table 36 shows that General Electric spent more on research and development in New England than all private sector firms in Canada during 1984.

Table 35

Federal Obligations for Research and Development
For New England
(millions of dollars)
(1973-85)

	1969	1973	1977	1981	1985
ME	14	9	18	24	36
NH	31	31	33	55	130
VT	9	18	37	19	38
MA	775	954	1,472	2,407	3,269
RI	33	59	110	183	334
CT	224	194	292	485	743
NE	1,086	1,264	1,961	3,173	4,550
US	15,355	16,486	22,841	31,930	47,176

Source: National Science Foundation, Federal Support to Universities, Colleges, and Selected Non-Profit Institutions, (1969, 1973, 1977, 1981, 1985)

Table 36

Research and Development Expenditures
By Leading Private Sector Companies
In New England
(millions of dollars)

	Total R&D Expenditures 1985	1984
General Electric Co. Fairfield, Conn.	2,553	2,304
United Technologies Corp. Maynard, Mass.	1,699	1,630
Xerox Corp. Exeter, N.H.	814	717
Textron Inc. Providence, R.I.	605	564
GTE Corp. Stamford, Conn.	313	265
Union Carbide Corp. Danbury, Conn.	280	268
Raytheon Co. Lexington, Mass	260	236
Wang Laboratories Inc. Lowell, Mass	182	181
Data General Corp. Westbourough, Mass.	128	102
New England's Top 75	9,500	8,500

Source: New England Business, "R&D Heats Up", (November 3, 1986)

Table 37 shows that research and development activities in Canada during 1984 were about $5.5 billion Cdn., about one percent of the nation's gross national product compared to $119 billion U.S. in the United States, representing 2.8 percent of total output. Only about five percent of research and development activity takes place in Atlantic Canada while almost nine percent of U.S. research and development takes place in Connecticut and Massachusetts alone.

The Atlantic region receives about nine percent of federal spending on research and development. Much of this is concentrated in the environment category (Table 38) due to the degree of fisheries research taking place. Very little research and development is in the area of national defence. Private sector research in Atlantic Canada is almost nonexistent, representing about one percent of the total undertaken in Canada in 1984. As noted in Table 37, this is well below the national average were over 50 percent of all research and development is from the private sector.

It is clear from this that the research and development base, so important to innovation, is vastly superior in New England, compared to most areas of the United States. Atlantic Canada, in contrast, is well behind the rest of the nation in research and development, while Canada itself is well behind the United States.

Table 37

Research and Development Expenditures In Canada
By Source of Funding
(millions of dollars)
(1984)

	Nfld.	P.E.I.	N.S.	N.B.	Canada	Atl/Can
Federal Gov.	46	7	119	29	2,158	9.3%
Provincial Gov.	2		3	3	321	2.5%
Industry	5	1	12	10	2,305	1.2%
Institutions	4	1	13	6	270	8.9%
Non-Profit Organizations	3		3	2	157	5.1%
Foreign			3	1	253	1.6%
Total	60	9	153	51	5,465	5.0%

Source: Statistics Canada.

Table 38

Federal Research and Development Expenditures
By Major Category
For the Atlantic Provinces
(millions of dollars)
(1978-79)

	Total R&D Expenditure
Environment	80.4
Agriculture	13.4
Medical and Natural Sciences	12.3
Other	11.0
Dept. of National Defence	8.0
Energy, Mines and Resources	6.7
Atlantic Energy	6.4
Industry, Trade and Commerce	0.4
Total	139.0

Source: Ministry of State for Science and Technology, Federal Science Activities, 1981.

Government Programs

Assistance to Business

The basis of the systemic/neo-Schumpeterian approach is that the process of growth and development is based on innovation, especially innovation by entrepreneurs; that innovation is increasingly based on access to basic scientific research; and that growth can be influenced in a positive country specific or region specific way by government policy[97]. However, this approach does not advocate unbridled government involvement in the economy. Governments shape and mold rather than create economic activity. The approach recognizes the interdependence between technology, economics and politics and is critical of many of the more interventionist policies of governments have used to promote technological growth.

Under pressure of competition and high domestic unemployment rates, governments around the world have developed a rich variety of innovation policies and measures. Most focus on the same 'high tech' areas, space, micro-electronics, micro-optics, computers, bio-technology, and so on. The use of incentives, particularly tax incentives, is viewed as less than efficient. Incentives add to the complexity of an already complex system, and tend to stimulate the imagination of accountants rather than entrepreneurs and scientists[98]. In the case of research and development the confidence in the potential profits from

the research are more important than marginal reductions in the cost of the research through various government assistance mechanisms[99].

Many so called innovative policies are designed to do no more than to perpetuate existing structures. For example, institutional barriers make educational systems slow to change and adopt new technology. In addition innovative policies are often implemented by some departments in conflict with the anti-innovative policies of other departments. Bureaucratic pressures within government, tend to see much of the available assistance captured by large companies in central regions. Administrators tend to favour dominant companies rather than the challenger, thus reducing the potential for competition[100].

The role for government is one of providing an appropriate environment for innovation by making available appropriate information, recognizing the value of human capital in applications for assistance, coordinating the various sectors of society toward common objectives, and acting as a rudder directing the little money available for discretionary expenditures toward more future oriented projects.

State governments in New England have had a significant impact on the economic growth in recent years. Attitudes of government towards business (taxes) have been cited as a key motivation for locating in New England[101]. In addition, state governments have made a special effort to encourage

business start-ups and expansions with capital and technical assistance. The government sponsored Massachusetts Technology Development Corporation, for example, undertakes venture capital financing in amounts between 100 and 250 thousand dollars[102]. Massachusetts in fact has the most sophisticated mix of public development finance institutions in the United States[103].

Some states provide a "one stop shopping centre" in the state government for business seeking information on site location, licensing requirements and state incentive programs. The Finance Authority of Maine (FAME) was created to bring a variety of financing programs under the control of one agency[104]. The New England States have been among the first to centralize business related programs.

New England states have pioneered special ways of achieving business, labour and government cooperation. The Commission on the Future of Mature Industries formed in Massachusetts to deal with the problem of declining industries is a good example[105]. Many state governments in New England play a role of consensus builder when dealing with economic problems and developing policy. The commission drew members from government, academics labour and business. The New England states have launched major programs for customized job training to meet high technology's employee and special skill needs. One such program was the Bay State Skills Corporation in Massachusetts[106]. Appendix 5 details the available programs on a state by state basis. Although incentives

vary, there appears to be a strong bias towards government loans and loan guarantees to provide low-cost financing. In summary, it would appear that state government incentives programs are, indeed, important in New England and it is a popular misconception that these governments play only a passive role with respect to industrial growth.

Neo-Schumpeterian theory would suggest that the process of government involvement in the economy is more important than the amount of money spent. Governments can not create industry but can guide them by making use of appropriate programs that do not involve excessive red tape. In addition the nature of a bureaucracy makes the giving of grants less than desirable. Grants often go to the larger industries because those are the ones that the bureaucrat in used to dealing with. The small entrepreneur may find a multitude of programs confusing and have difficulty fitting the requirements of a given program. Even if a company manages to qualify the inventive may not be useful because of conflicting policies of other government departments. An incentive given by one department may be taxed away by another.

These are all familiar problems in Atlantic Canada. Canadian Regional Policies developed since 1945, reflect influences ranging from neo-classical economics to dependency theory. While theoretical influences on policy have been large it also must be recognized that policies were often developed as an ad-hoc response to an immediate socio economic and political problem. Policies such as The

Prairie Farm Rehabilitation Act (PFRA) of 1935 and its eastern counterpart, The Maritime Marshlands Rehabilitation Administration (MMRA), would fall into this category. Recommendations for a system of transfers to poorer provinces (equalization) grew out of the Rowell-Sirois Commission of 1940[107] which was in part a response to serious disparities among the various regions of Canada.

Even as regional theory became more refined in the 1960's and 1970's the ad-hoc emergency response component of regional policy was a big factor in policy development. Perhaps the best example of an early regional policy in the emergency response category is the Maritime Freight Rates Assistance Act (MFRA) of 1927 which came out of the Duncan Commission on Maritime Claims[108]. The Duncan Commission was a direct federal response to the potential disruptive influence of the Maritime Rights Movement[109].

More recent ad hockery can be found in the expansion of the application of the Special Areas program of the Department of Regional Economic Expansion after the Quebec crisis in the early 1970,s[110]. Even more recent was the dismantling of DREE and the creation of the Department of Regional Industrial Expansion whose focus was mainly the cyclical problems in central Canada caused by the 1981-82 recession[111]. Most recently the Atlantic Canada Opportunities Agency (ACOA) has been established[112].

Programs and policies designed to promote economic development in Atlantic Canada have often worked at cross purposes. Bidding wars for industrial plants reflect

futility of competition between governments. The taxation of industrial development grants, thus reducing their effectiveness, is a clear case of government departments with conflicting orientations, free market departments verses interventionist departments, working at cross purposes with a net increase in complexity and a net decrease in effectiveness.

Regional policy in Atlantic Canada is focused on subsidizing the establishment of low skill manufacturing plants, when the real long term security is at the innovation and design end of the product cycle, producing the intangible information and the prototypes that are the basis of rapid growth and quality jobs. Regional policies in Canada provide a good example of the faults identified by the systemic approach to economic development.

Procurement

While there is some evidence to suggest that the United States uses military and other procurement as a direct agent of area development, there is no doubt that through accident of history or through political leverage, New England has been a clear beneficiary of government largess. The main arm of this policy has been military procurement and

military related research and development. The degree to which New England is favoured in this regard has been discussed at some length in an earlier section.

The Atlantic region has not benefited to the same degree. Three factors are at play here, institutional or bureaucratic barriers, leakages, and the perceived conflict, evolving from orthodox notions of economic efficiency, between regional and national priorities. Leakages were discussed in the section on military spending. It was demonstrated that only a fraction of spending on procurement in the Atlantic region finds its way into the local economy. The opportunity to build an economic base through procurement is dissipated by leakages and inconsistent funding.

The institutional barriers recognized by the systemic approach are in full force in the Atlantic region. Discrimination in favour of established firms through ridged bidding practices, and supplier preference is common in Canada. Government contracts often reduce competition through continued use of narrow specifications. Interference in favour of more politically powerful regions is not unknown. Single tendering is common in Canada, in fact the majority of government purchases are not tendered competitively.

Government procurement is recognized as an important lever in regional economic development within the systemic approach. This type of policy appears contrary to orthodox notions of efficiency. Central purchasing is seen as more

efficient. In reality institutional barriers tend to reduce competition and efficiency. Spreading the economic pie more fairly may in fact encourage new start ups in depressed regions, greater competition and increased efficiency in the long run. Table 39 shows the current and potential influence of such a policy in Atlantic Canada. In the case of Canada, crown corporations have significant potential for directed purchasing.

Table 39

Public Sector Spending
In Canada
(billions of dollars)
(1979)

	Amount	Percent
Government Sector		
Federal Government	5.6	12.9%
Provincial Governments	8.0	18.5
Local Governments	5.6	12.9
Hospitals	1.9	4.3
Universities	0.8	1.7
Government Enterprises		
Federal	8.6	19.7
Provincial	10.8	24.8
Local	2.2	5.2
Total	43.5	100.0

Source: Size and Structure of The Public Sector Market 1979, Supply and Services Canada, (Sept., 1983)

Footnotes

1. Wayne Ayers, "Economic Revitalization of New England and Prospects for the Eastern Provinces," Paper presented to Tri-Regional Seminar, (Boston, May 3, 1984).

James M. Howell, "The Economic Renaissance of New England," Economic Impact, Vol.. 51, (1983).

John S. Hekman and John S. Strong, "The Evolution of New England Industry," New England Economic Review (Mar./Apr. 1981).

Laura Roebuck, "Atlantic Canada and New England: A Rose Through World-coloured Glasses," Atlantic Business (1987).

James M. Howell, "Summary of Remarks Before The International Experts Conference on Venture Capital and New Entrepreneurship," (Istanbul, May 21-22, 1987).

Robert E. Charm, "Is Dukakis Taking Credit Where Credit's Not Due?," New England Business, (July 6, 1987).

Daniel Okrent, "Boom!," New England Monthly, (Feb., 1987).

Lynn E. Browne, "High Technology and Regional Development," New England Economic Indicators (Apr. 1984).

Department of Regional Industrial Expansion, New England and Atlantic Canada: A Comparative Study (Halifax, APEC, Sept. 1985).

Ronald F. Ferguson and Helen F. Ladd, Economic Performance and Economic Policy In Massachusetts (Cambridge: John F. Kennedy School of Government, Harvard University, May 1986).

2. Wayne Ayers, "Economic Revitalization of New England and Prospects for the Eastern Provinces," p. 3.

3. The New England Council, Inc., New England Adapting to Change: A Comparative Strategy (Boston: New England Council Inc., 1985), p. 16.

4. Ibid. p. 80.

5. John Hekman and John Strong, New England Economic Review, p. 35.

6. Ibid.

7. Connecticut Dept. of Economic Development, Connecticut Market Data 1983, (Hartford: Connecticut Dept. of Economic Development, 1983)

8. Ibid.

9. Interview, David Ryan.

10. U.S. Dept. of Defence.

11. U.S. Dept. of Commerce.

12. Lynn E. Browne and Sarah Gavian, "The Impact of Defence Spending On New England", Economic Indicators (Oct. 1981)

13. "A Survey of New England," The Economist (Aug. 8), p. 17.

14. Lynn E. Browne and Sarah Gavian, Economic Indicators, p. 4.

15. U.S. Dept. of Defence.

16. Lynn E. Browne and Sarah Gavian, Economic Indicators, p. 5.

17. U.S. Dept. of Defence.

18. Canadian Department of National Defence.

19. James H. Howell and Linda D. Frankel, "Economic Revitalization and Job Creation in America's Oldest Industrial Region," Summary of remarks from Public Policy Week, (Washington: American Enterprise Institute for Public Policy Research, Dec. 2, 1985).

20. Ronald F. Ferguson and Helen F. Ladd, Economic Performance and Economic Policy In Massachusetts, p. 38.

21. Ibid., p. 40.

22. Ibid., p. 40.

23. Ibid.

24. Statistics Canada.

25. U.S. Dept. of Commerce, Statistical Abstract of the United States (Washington: U.S. Dept. of Commerce, 1987).

26. Statistics Canada

27. Ibid.

28. Ibid.

29. Sheila Dow, "Money and Regional Development," Studies in Political Economy No.23, (Summer, 1987), p. 77.

30. Ibid.

31. Tom Naylor, The History of Canadian Business 1867-1914: The Banks and Finance Capital (Toronto, 1978), Chapter 3.

32. Ibid.

33. Robert E. Charm, New England Business, p. 36.

34. Ibid.

35. Ibid.

36. Ronald F. Ferguson and Helen F. Ladd, Economic Performance and Economic Policy In Massachusetts, p.42.

37. The New England Council Inc.

38. Ronald F. Ferguson and Helen F. Ladd, Economic Performance and Economic Policy In Massachusetts, p. 41.

39. Ibid., p. 42.

40. Ibid.

41. The Economist, p. 6.

42. Ibid., p. 6.

43. APEC, "Background Paper on Venture Capital In Atlantic Canada," (Halifax: APEC, 1985).

44. Lisa McGurrin, "What Happens After Full Interstate Banking Didn't?," New England Business (November 17,1986).

45. Bank of Canada.

46. Tom Naylor, The History of Canadian Business 1867-1914: The Banks and Finance Capital.
Sheila Dow, Studies in Political Economy.

47. Richard F. Syron, "The New England Experiment in Interstate Banking," The New England Economic Review (Mar./Apr. 1984) p. 7.

48. Ibid.

49. Constance R. Dunham, "Iinterstate Banking and The Outflow of Local Funds," New England Economic Review (Mar./Apr. 1986) p. 13.

50. Ibid.

51. Ibid. p.17.

52. Ibid.

53. Ibid.

54. Comments by Robert LaRocque, International Banking Division Toronto Dominion Bank, Houston Texas Dec. 29, 1987.

55. Tom Naylor, The History of Canadian Business 1867-1914: The Banks and Finance Capital.

56. Sheila Dow, Studies in Political Economy.

57. James Frost, "The Nationalization of the Bank of Nova Scotia," Acadiensis Vol.XII, No.1, (Autumn, 1982), p. 17.

58. Constance R. Dunham, New England Economic Review.

59. Ibid. p.10.

60. Ibid.

61. The Economic Council of Canada, Living Together: A Study of Regional Disparities, (Ottawa: Supply and Services Canada, 1977), p.25.

62. Ibid.

63. Ibid. p.29.

64. John C. Hoy, "The Next Threshold: Higher Skills and the New England Economy," New England Journal of Public Policy (Winter, 1986).

65. The Economist, p. 7.

66. New England Board of Higher Education, Facts About New England Colleges, Universities, and Institutes: Supplementary Higher Education Data (Boston: New England Board of Higher Education, Nov. 1986), Section IV.

67. Ibid.

68. The Economist, p. 5.

69. Nova Scotia in particular, with 12 universities and colleges is near the top among Canadian provinces in numbers of students enrolled in universities per 1000 of population.

In addition, provincial government expenditures by catigory (Statistics Canada, CANSIM mtricies 2751-63, October, 1987) show that all of the Atlantic provinces spentrelatively more of their budgets on education than the Canadian average in 1987-88. In fact, no provincial governments spent more.

70. Ronald F. Ferguson and Helen F. Ladd, Economic Performance and Economic Policy In Massachusetts, p. 13.

71. The Economist, p. 7.

72. Ronald F. Ferguson and Helen F. Ladd, Economic Performance and Economic Policy In Massachusetts, p. 42.

73. Tom Courchene, "A Market Perspective on Regonal Disparities," Canadian Public Policy Vol.7 No.4, (1981), pp.506-18.

Tom Courchene and James Melvin, "Canadian Regional Policy: Lessons from the Past and Prospects for the Future," Canadian Journal of Regional Science Vol.9 No.1, (1986), pp.49-67.

74. Robin Boadway and Frank Flatters, "Efficiency and Equalization Payments in a Federal System of Government: A Synthesis and Extension of Recent Results," The Canadian Journal of Economics Vol.15 No.4, (1983), pp. 613-33.

75. R. Batra and G.W. Scully, "Technical progress, Economic Growth, and the North South Wage Differential," Journal of Regional Science Vol.12 No.3, (1972), pp. 375-86.

76. Wayne Ayers, "Economic Revitalization of New England and Prospects for the Eastern Provinces," p. 3.

77. The U.S. Bureau of Labour Statistics reports that the female participation rate in New England is the highest among the nation's nine regions, The rate in New England was 58.4 percent compared to 54.5 percent for the nation in 1985.

A recent edition of the Economist reported that "In New England -- about 64 percent of teenagers work, compared with 53 percent of America's, 40 percent of its black teenagers, compared with 24 percent of America's.

78. Since programs vary from state to state there are exceptions to this pattern. In Maine, for example, it is easier to qualify for benefits than in Canada.

79. The DPA Group Inc., "Comparison Between the Economies of Maine and New Brunswick," (Fredericton, DPA Group, April, 1987).

80. U.S. Dept. of Commerce, Statistical Abstract of the United States 1987 (Washington: U.S. Dept. of Commerce 1987), p. 408.

81. Ibid.

82. The Economist, p. 13.

83. Ibid.

84. Statistics Canada.

85. Robert Tannenwald, "Rating Massachusetts' Tax Competitiveness," New England Economic Review (Nov./Dec. 1987), p. 33.

86. In 1986, the voters of Massachusetts, imposed a tax "cap" on state revenues. Five years earlier local property taxes were ristricted under "Proposition 2 1/2".

87. Robert Tannenwald, New England Economic Review.
Michael J. Merenda, "An Empirical Investigation of Facility Location Decisions for New Hampshire: Executive Experiences and Perceptions," The New England Journal of Business and Economics Vol.8 No.2, (1982).
Michael J. Merenda, "New Hampshire's High Technology Industry: Some Preliminary Observations and Findings," The New England Journal of Business and Economics Vol.9 No.2, (1983).

88. Gerry Sweeney, ed., Innovation Policies: An International Perspective (London: Frances Pinter Publishers Ltd.,1985), p. VIII.

89. Martin Fransman, Technology and Economic Debelopment (Bolder: Westview Press, 1986), p. 64.

90. Gerry Sweeney, Innovation Policies: An International Perspective, p. 12.

91. Ibid., p. 83.

92. see footnote no. 1.

93. Edward Roberts, "A Basic Study of Innovators: How to Keep and Capitalize on Their Talents," Research Management Vol. XI, No. 4, (1968).

94. James Howell in remarks to the International Experts Conference in Istanbul noted that over 90 percent of the electrical engineers who received their final schooling in New England remained in the region for their Employment.

95. Robert E. Charm New England Business, p. 36.

96. James M. Howell, "The Economic Renaissance of New England," Economic Impact, Vol.51., (1983), p. 22.

97. Lars Osberg, "Beyond Button Pushing," Policy Options, (March, 1987), p. 25.

98. Gerry Sweeney, Innovation Policies: An International Perspective, p. 21.

99. Ibid.

100. Lars Osberg, Policy Options.

101. Michael J. Merenda, The New England Journal of Business and Economics.

102. Ronald F. Ferguson and Helen F. Ladd, Economic Performance and Economic Policy In Massachusetts, p. 160.

103. Ibid., p. 54.

104. The DPA Group, p. 32.

105. Ronald F. Ferguson and Helen F. Ladd, Economic Performance and Economic Policy In Massachusetts, p. 113.

106. Ibid., p. 100.

107. Canada, Royal Commission Report on Dominion Provincial Relations (Ottawa: Kings Printer,1940).

108. Canada, Royal Commission on Maritime Claims, (Ottawa: Kings Printer, 1926).

109. Ernest Corbes, Maritime Rights (Montreal: McGill-Queen's University Press, 1979).

110. Atlantic Provinces Economic Council, Atlantic Canada Today (Halifax: APEC, 1987), p. 123.

111. Ibid.

112. Ibid., p. 124.

CHAPTER V

SUMMARY AND CONCLUSIONS

New England's rapid growth in recent years is closely related to its status as one of the main centres of high technology in the United States, and indeed the world. This growth of high technology industries sees to have been more a product of historical circumstance, a long history of innovation, defence industry concentration and risk-taking, than the result of a carefully planned development effort. While New England is at the geographical periphery of the U.S. it has been and remains a business centre for a variety of specialized goods and services.

While certain key factors found in the New England experience are common to any successful growth area, the fashion in which they are combined in this region is unique. These factors have been reviewed at some length in the preceding section in respect to their role in the process of growth in these six states. Their relevance to growth in Atlantic Canada was also addressed. Which factors are most important? Ranking factors in order of their influence on growth is a subjective process. It is best to review all factors as a necessary part of the development process and not try and isolate one or more for study in a sterile artificial environment. It is the process that is important, not individual factors.

Just as growth can not be explained by any one factor, a single economic theory can not fully explain growth as it has taken place in New England. However the preceding sections show that a review of a range of theory provides needed prospective in understanding the many forces that come into play. The elements which have come together to mold growth in New England are well documented. It is a simple task to establish a consensus on those that are most important. While the factors themselves are important, it is their theoretical grounding that brings them to life.

Factors of importance include those contributing to agglomeration economies, a term associated with the regional science perspective. These include an existing economic base conducive to the formation of economic linkages. Existing industries provide a base for future growth by providing a ready source of capital, labour, expertise and entrepreneurs for new firms. The defence establishment plays an important role in this regard in New England. Defence procurement, and funding for research and development at universities and by industry is at the core of much of the high technology development in the region. Quite simply, New England had a big head start in the major high technology sectors which have been at the hub of the recent New England miracle.

Another important aspect of New England's economic base is the availability of capital, either in the form of 'old money' from established families, from merchant bankers, or more recently through venture capitalists. While there is a

heavy concentration of capital in the region, the willingness of investors of various stripes to take risks is just as important. In New England, opportunities for innovation abound due, in large part, to the existing base of industries. The abundance of opportunities attract investment which breeds success which in turn attracts more investment. The rather unique, entrepreneurial rich, nature of the region's universities together with their sheer size and number also contribute to the agglomeration effects. These institutions have not only been a prime source of research and development but are prime sources of highly skilled personnel and all important entrepreneurs. agglomeration economies.

Where the regional science approach focuses on the nature of a region's economic base, the neo-classical perspective recognizes the role of well functioning capital and labour markets in the growth process. It has been maintained that the rationalization and adjustment of traditional industries in New England helped the growth of new high technology manufacturing by freeing up labour and capital at just the right time. The environment generated by allowing the adjustment process to work is one favourable to economic growth. High quality skills are available at reasonable prices. Emigration takes care of displaced workers not useful in the new high technology sectors, and tax rates are held in check since a policy response is not needed to accommodate either displaced workers or declining industries.

While growth and adjustment are explained in broad terms within the regional science and neo-classical perspectives, the all important role of the entrepreneur is not well developed. Another theoretical perspective, the neo Schumpeterian approach, develops this important aspect more fully. This approach outlines the process of innovation, the use of technology and invention by entrepreneurs to produce growth. It is extremely difficult to demonstrate the validity of an innovation theory because of the social complexity of the phenomena being studied. This perspective does however recognize the integrated nature the process known as growth. It is this aspect that gives the paradigm its explanatory power and makes it worth considering as a growth theory.

What does all this mean for the Atlantic region? In reviewing various factors which contributed to economic growth in New England, it becomes clear that many factors have no application in Atlantic Canada. As a process, growth in New England is a unique combination of mostly indigenous factors. However a review of growth in New England provides some valuable insights into the problems of Atlantic Canada and some lessons for policy.

Atlantic Canada lacks a both the large and specific economic base needed to attract high growth industries. The region has few head offices and very little private research and development which might spur innovation. History shows that firms that are successful and not area or resource specific are often targets of acquisition and consolidation

from outside the region. The industrial structure of the region show few signs of inter-industry linkages. While industry, educational institutions and government are clearly intertwined in New England, few explanations other than lack of lack of sufficient scale or the presence of barriers to equilibrium adjustment can be found in orthodox theory to explain the lack of growth in Atlantic Canada. Other explanations are available if the range of available theoretical perspectives is expanded.

Defence spending plays the dual role of stimulating aggregate demand for New England's main high technology products and funding a vital research and development base in the region. Canada is simply in a different league than the United States in this regard. Defence spending in the U.S. and Canada tends to be very cyclical and highly politically charged. However, the U.S. uses military spending as a more overt regional development policy than does Canada.

While the availability of investment capital for traditional projects is adequate in most cases, equity and risk capital are more of a problem in Atlantic Canada. This is in contrast to the array of venture capital firms and other sources of risk capital in New England. In this region financing is available for the non-traditional investments that tend to lead economic growth is more widely available. Differences in availability of capital may be related to the differences in the banking systems of the two countries, although this is by no means certain.

The fragmented banking system in the New England (many independent banks within each state) tends to promote outflow of local deposits in the same manner as Canadian banks in their preconsolidation phase. It does appear, however, that some Atlantic business were starved of capital at one time, a situation that never occurred in New England. This historical fact, contributed in many ways to the present structure of the Atlantic economy. Recognizing this fact will not resurrect the ghosts of past businesses, and programs to make capital available now is probably a case of too little and too late

The size and number of educational institutions in Atlantic Canada can not compare to the base of institutions in New England. New England has been called the most education intensive region of the United States. Students from all over the U.S. and the world converge on New England's universities and institutes and a high proportion of the best and brightest stay. The scenario in Atlantic Canada is much different. While a high proportion of university aged individuals are involved in post-secondary education many of the best and brightest leave. The old adage that the region's largest export is brains rings true and has for some time. The emigration of the highly trained, leaves behind a population which demonstrates a level of education and training below the national average. This simple fact shows the important linkage between an industrial base that provides jobs and the institutions that train its workers.

Canadian universities, with a few exceptions, do not promote integration with the business community or entrepreneurial spin-off activity. Some of the efforts in this regard in the Atlantic region never got off the ground (Dalhousie University) or are still very new (Seabright Resources at Memorial University). Innovation related to university research and development is held back by both institutional rigidities and economic constraints. Research and development in Atlantic Canada does not have a big benefactor like the U.S. Department of Defence. There are nevertheless areas of world expertise in Atlantic Canada that could be developed with proper support and the elimination of institutional barriers.

The rationalization of traditional industries in New England contributed to the recent resurgence by freeing up capital and skilled low cost labour. Resources were not spent on propping up declining industries and emigration was one of the prime solutions to plant closure. Present labour shortages in New England, reflected in low unemployment rates and high participation rates, are a result of this emigration combined with a little better than average growth in employment. It is not clear that Atlantic Canada's problems relate to a lack of adjustment. Much of the adjustment in "mature" industries in the region took place 50-60 years ago. Studies of institutional barrier to labour mobility indicate that only a small portion of the high

unemployment rates in Atlantic Canada can be explained by institutional barriers such as a liberal unemployment insurance system.

Low wages in the manufacturing sector are often pointed to as an outcome of adjustment and an important contributor to the resurgence in economic growth in New England. Manufacturing wages in Atlantic Canada have been well below the national average for decades. It has been argued that wages are not low enough because of minimum wages or other structural rigidities, or that adjustment is indeed taking place but that it is a long term process. Disparities between the Atlantic region and the rest of Canada, which in theory should be eliminated as an economy moves to equilibrium, are nothing new and in the 1980's some are higher than ever.

Business environment, most notably the tax burden that must be carried by business and individuals, is sometimes mentioned as important in molding the pattern of recent economic growth in New England. However, many areas of the U.S. have more favourable tax environments than New England. Relative tax rates have affected industrial structure within the region. Disparities in tax rates among the New England states may explain an observed pattern of migration from the southern three states to the northern three by people and industry. Decline in tax rates in Massachusetts is a combination of tax moratoriums and rollbacks through referendum and rapid growth in taxable income of firms and individuals.

The tax situation in Atlantic Canada is very different Rather than having some of the lowest taxes in the nation, as in New England, Atlantic Canada has the highest. Provincial governments spend most of their budgets on statutory services (health and education), infrastructure, and debt servicing. The practice of borrowing to provide basic services has put upward pressure on taxes and constrained expansion of services. To the extent that low taxes and restraint on the part of government creates a favourable environment for business, and there is some evidence of this in New England, Atlantic Canada is at the other end of the spectrum. The business environment in this region is distinctly unfavorable.

The process of innovation and its role in growth is difficult to describe. In New England it has a high technological component and involves the interaction of entrepreneurs in a facilitating role, research and development in an initiation role, and government in a supportive role. Entrepreneurs abound in New England. A high concentration of innovators in New England reflects a large economic base of industry, educational institutions and financial institutions that developed in an integrated and mutually supportave way. The innovative process would not be as strong if even one aspect were missing.

There has been some debate regarding the apparent lack of entrepreneurs in Atlantic Canada. Atlantic Canada clearly lacks the economic base for large scale innovation in the manner of New England. More than this, the region

lacks the coordinated approach to the process. Some have maintained that for mainly for social reasons, the region does not generate its share of entrepreneurs. Lack of opportunity for innovation, rusty entrepreneurial skills, and a series of institutional barriers seem to provide a more plausible explanation, however.

Research and development is not a priority in Atlantic Canada, or in Canada for that matter. The country and the region spend a very small percentage of output on research compared to the U.S. and New England. Where that research does take place in Atlantic Canada, it often takes place in isolation with little integration into the mainstream of the economy. Government regional development programs in Atlantic Canada are steeped in bureaucratic and institutional barriers to innovation. Assistance programs of various departments and levels of government are often in conflict. Aid programs are often administered in a fashion that favours established, usually large, companies. This tends to reduce the potential for healthy competition. The same problem is apparent with government procurement policy. Defence procurement in New England is more development orientation. Government programs for assistance to industry seem more coordinated and accessible than those in the Atlantic provinces.

The reasons behind the pattern of growth in New England are complicated. While contributing factors can be isolated their contributions are as part of a growth process, all factors interacting with each other. The precise way these

factors interact in New England is unique. Few direct links can be drawn to explain the pattern of growth in Atlantic Canada despite some similarities in history, geography, and proximity. There are some lessons that can be drawn however.

Economic base is an important aspect in determining potential for growth in a given region. Policy in Atlantic Canada has focused on promoting the comparative advantage of the region. Often this has translated into continued support for primary processing of natural resources. The development of an economic base related to areas of local research and development expertise has been overlooked. Reliance on defence spending as a propulsive industry as in the United States may be unwise given the lack of scale and cyclical nature of this sector in Canada. In addition, the history of defence procurement in the U.S. shows that defence industries may not always be the most efficient innovators.

Growth based on innovation tends to have desirable characteristics such as labour intensity and very rapid growth. In contrast, focusing development on attracting branch plant firms in the latter stages of the product cycle have little potential for spin-off activity. Their focus is on least cost production rather than research and development.

Government has a pivotal role in economic development as a coordinator, a source of information, a provider of uncomplicated and accessible assistance, all with the least

amount of bureaucracy. Government programs can often do more harm than good if goals are unclear and if policies are disjointed.

Educational institutions play an important role as a key source of well trained workers. Universities can also play a more integrated role in the economy a sources of knowledge and expertise and as hubs of innovation.

The patterns of economic growth in the Atlantic provinces, like those in New England, are a function of many factors which are all part of an integrated and unique process. The theories and elements which explain observed patterns of growth in New England fall short when applied to Atlantic Canada. Growth and lack of growth are not the opposite sides of the same coin. Policies that may successfully promote growth in one area will not necessarily work in another. It seems that in order to promote economic growth first its nature must be understood. It may be that theories which explains events in a region in transition do not find the same application in a region where problems are more chronic.

Growth can be explained in terms of various theories and factors in combination. In the case of this study, growth in New England has been tracked in terms of well known theories and growth factors. The same theoretical and empirical tools were found wanting when applied to Atlantic Canada. Assembling the appropriate theories and elements that explain growth in the Atlantic region of Canada is a task for another day.

Appendix A:

Statistical Profile of New England and Atlantic Canada

Source of American Data:
Raymond J. Waldmann and Robert A. Cohn, Business Investment in the United States: A Guide to Federal and State Incentive Programs, Laws, and Restrictions, Bureau of National Affairs Inc., Washington, 1984.

Maine

1. Investment Climate Indicators

Capital: Augusta (21,819)

Major Cities (1980):
1. Portland (61,572)
2. Lewiston (40,481)
3. Bangor (31,643)
4. Auburn (23,128)
5. South Portland (22,712)

Population (1980):	1,125,030	Percent Black (1980):	0.3
Area (sq. mi.):	31,905	Percent Metropolitan (1980):	33.0
Pop. Density (1980):	36.3	Pop. Growth (%, 1970–80):	13.2

High School Graduates (% persons 25+ years, 1980): 68.5%

College Graduates (number, 1980): 101,782

Major Industries: Paper, leather, food, lumber/wood, transportation equipment

Right-to-Work Law: no

Minimum Wage Law: yes

Employment (Jan. 198x) Total: 397,400 (Wage & Salary)

Manufacturing:	104,700	White Collar:	43.3%
Wholesale & Retail Trade:	83,600	Blue Collar:	40.6
Government:	81,600	Service Workers:	13.3
Services:	77,700	Farm Workers:	2.7
Transport & Utilities:	17,000		100.0%
Finance, Insurance & Real Estate:	17,900		
Construction:	14,900		
Mining:	(included in services)		

	U.S.	State
Manufacturing Value Added ($ in millions, 1980):	773,441	3,600
Average Manufacturing Earnings ($/prod. hours, Jan. 1983):	—	7.52
Union Membership (%, 1980):	23.2	24.2
Work Stoppages (1,000 days idle) (1978):	36,922	214
(1979):	34,754	65
(1980):	33,289	112
(1981):	24,730	14
Unemployment (%, 1982):	9.5	7.6
Per Capita Income (% U.S., 1981, U.S. = $10,517):	100	82
State & Local Government Expenditures ($/cap., 1980):	1,622	1,405
State & Local Government Education Expenditures ($/cap., 1980):	588	484
Federal Aid to State & Local Government ($/cap., 1981):	396	465
Retail Sales ($ in billions, 1982):	1,075.7	4.6

New Hampshire

1. Investment Climate Indicators

Capital: Concord

Major Cities (1980):
1. Manchester (90,936)
2. Nashua (67,865)
3. Concord (30,400)
4. Portsmouth (26,254)
5. Salem (24,124)

Population (1980):	920,610	Percent Black (1980):	.04
Area (sq. mi.):	9,304	Percent Metropolitan (1980):	50.7
Pop. Density (1980):	99	Pop. Growth (%, 1970–80):	24.8%

High School Graduates (% persons 25+ years, 1980): 72%

College Graduates (number, 1980): 100,000

Major Industries: Machinery, electrical equipment, paper and allied products

Right-to-Work Law: no

Minimum Wage Law: yes

Employment (Nov. 1981) Total: 444,615

Manufacturing:	115,400	White Collar:	48.8%
Wholesale & Retail Trade:	87,900	Blue Collar:	36.5
Government:	60,300	Service Workers:	12.7
Services:	74,250	Farm Workers:	2.0
Transport & Utilities:	14,000		100.0%
Finance, Insurance & Real Estate:	19,850		
Construction:	21,950		
Mining:	less than 1,000		

	U.S.	*State*
Manufacturing Value Added ($ in millions, 1980):	773,441	3,606
Average Manufacturing Earnings ($/prod. hours, 1981):	7.99	6.41
Union Membership (%, 1980):	25.2	15.8
Work Stoppages (1,000 days idle) (1978):	36,922	60.5
(1979):	34,754	46.5
(1980):	33,289	59.3
(1981):	24,730	83.3
Unemployment (%, Dec. 1981):	7.6	5.4
Per Capita Income (% U.S., 1981, U.S. = $10,517):	100	96
State & Local Government Expenditures ($/cap., 1980):	1,622	1,340
State & Local Government Education Expenditures ($/cap., 1980):	588	470
Federal Aid to State & Local Government ($/cap., 1981):	407	327
Retail Sales ($ in billions, 1980):	960.8	4.1

Vermont

1. Investment Climate Indicators

Capital: Montpelier (8,200)

Major Cities (1980):
1. Burlington (37,700)
2. Rutland (18,400)
3. Bennington (15,800)
4. Essex (14,400)
5. Brattleboro (11,900)

Population (1980):	511,456	Percent Black (1980):	0.2
Area (sq. mi.):	9,609	Percent Metropolitan (1980):	22.3
Pop. Density (1980):	53.2	Pop. Growth (%, 1970–80):	15.0

High School Graduates (% persons 25+ years, 1980): 70.5%

College Graduates (number, 1980): 58,000

Major Industries: Electrical equipment, machinery, paper, printing and publishing

Right-to-Work Law: no

Minimum Wage Law: yes

Employment (1982) Total: 264,000

Manufacturing:	55,000	White Collar:	51.1%
Wholesale & Retail Trade:	50,000	Blue Collar:	30.4
Government:	31,000	Service Workers:	14.5
Services:	49,000	Farm Workers:	4.1
Transport & Utilities:	11,000		100.0%
Finance, Insurance & Real Estate:	N.A.		
Construction:	15,000		
Mining:	(included in total)		

	U.S.	*State*
Manufacturing Value Added ($ in millions, 1980):	773,441	1,687
Average Manufacturing Earnings ($/prod. hours, 1981):	7.99	6.79
Union Membership (%, 1980):	25.2	18.0
Work Stoppages (1,000 days idle) (1978):	36,922	12
(1979):	34,754	26
(1980):	33,289	28
(1981):	24,730	42
Unemployment (%, 1981):	7.6	5.7
Per Capita Income ($ U.S., 1981, U.S. = $10,517):	100	82
State & Local Government Expenditures ($/cap., 1980):	1,627	1,600
State & Local Government Education Expenditures ($/cap., 1980):	588	628
Federal Aid to State & Local Government ($/cap., 1981):	407	541
Retail Sales ($ in billions, 1980):	960.8	2.0

Massachusetts

1. Investment Climate Indicators

Capital: Boston

Major Cities (1980):
1. Boston (569,994)
2. Worcester (161,799)
3. Springfield (152,319)
4. New Bedford (98,478)
5. Cambridge (95,322)

Population (1980):	5,737,037	Percent Black (1980):	3.9
Area (sq. mi.):	8,257	Percent Metropolitan (1980):	83.8
Pop. Density (1980):	732	Pop. Growth (%, 1970–80):	0.8

High School Graduates (% persons 18+ years, 1980): 74.1%

College Graduates (number, 1980): 769,528

Major Industries: Machinery, electrical/electronic equipment, instruments

Right-to-Work Law: no

Minimum Wage Law: no

Employment (FFY 1981) Total: 2,657,000

Manufacturing:	668,000	White Collar:	57.4%
Wholesale & Retail Trade:	575,000	Blue Collar:	29.1
Government:	397,000	Service Workers:	13.3
Services:	657,000	Farm Workers:	.2
Transport & Utilities:	120,000		100.0%
Finance, Insurance & Real Estate:	162,000		
Construction:	78,000		
Mining:	(included in services)		

	U.S.	State
Manufacturing Value Added ($ in millions, 1980):	773,441	23,221
Average Manufacturing Earnings ($/prod. hours, 1981):	7.99	7.01
Union Membership (%, 1980):	25.2	24.9
Work Stoppages (1,000 days idle) (1978):	36,922	331
(1979):	34,754	531
(1980):	33,289	413
(1981):	24,730	696
Unemployment (June 1982 %):	9.5	9.0
Per Capita Income (% U.S., 1981, U.S. = $10,517):	100	106.1
State & Local Government Expenditures ($/cap., 1981):	1,622	1,762
State & Local Government Education Expenditures ($/cap., 1980):	588	563
Federal Aid to State & Local Government ($/cap., 1981):	407	465
Retail Sales ($ in billions, 1982):	1,075.7	29.7

Connecticut

1. Investment Climate Indicators

Capital: Hartford

Major Cities (1980):
1. Bridgeport (142,546)
2. Hartford (136,392)
3. New Haven (126,109)
4. Waterbury (103,266)
5. Stamford (102,453)

Population (1980):	3,107,576	Percent Black (1980):	7.0
Area (sq. mi.):	4,870.4	Percent Metropolitan (1980):	88.3
Pop. Density (1980):	638.0	Pop. Growth (%, 1970–80):	2.4

High School Graduates (% persons 25+ years, (1980): 70.5

College Graduates (number, (1980): 403,000

Major Industries: Transportation equipment, machinery, fabricated metal

Right-to-Work Law: no

Minimum Wage Law: yes

Employment (Jan. 1982) Total: 1,417,700

Manufacturing:	429,600	White Collar:	58.4%
Wholesale & Retail Trade:	238,300	Blue Collar:	29.6
Government:	181,600	Service Workers:	11.7
Services:	287,300	Farm Workers:	0.3
Transport & Utilities:	42,100		100.0%
Finance, Insurance & Real Estate:	113,500		
Construction (includes mining):	44,300		

	U.S.	*State*
Manufacturing Value Added ($ in millions, 1980):	773,441	15,973
Average Manufacturing Earnings ($/prod. hours, Jan. 1982):	—	8.00
Union Membership (%, 1980):	25.2	22.9
Work Stoppages (1,000 days idle) (1978):	36,923	239
(1979):	34,754	1,114
(1980):	33,289	514
(1981):	24,730	175
Unemployment (%, Dec. 1981):	8.9	6.7
Per Capita Income (% U.S., 1981, U.S. = $10,517):	100	124
State & Local Government Expenditures ($/cap., 1980):	1,622	1,583
State & Local Government Education Expenditures ($/cap., 1980):	588	552
Federal Aid to State & Local Government ($/cap., 1981):	407	377
Retail Sales ($ in billions, 1977):	724.1	10.4

Rhode Island

1. Investment Climate Indicators

Capital: Providence

Major Cities (1980):
1. Providence (156,804)
2. Warwick (87,123)
3. Cranston (71,992)
4. Pawtucket (71,204)
5. E. Providence (50,980)

Population (1980):	947,154	Percent Black (1980):	2.9
Area (sq. mi.):	1,214	Percent Metropolitan (1980):	92
Pop. Density (1980):	903	Pop. Growth (%, 1970–80):	−0.3

High School Graduates (% persons 25+ years, 1980): 60.7%

College Graduates (number, 1980): 120,000 (estimate)

Major Industries: Jewelry, textiles, electrical machinery, primary metal, fabricated metal products, machinery, transport equipment, chemicals, scientific instruments

Right-to-Work Law: no

Minimum Wage Law: yes

Employment (Jan. 1983) Total: 383,400

Manufacturing:	114,000	White Collar:	47.4%
Wholesale & Retail Trade:	76,900	Blue Collar:	38.6
Government:	57,400	Service Workers:	13.7
Services:	89,300	Farm Workers:	less than 1
Transport & Utilities:	13,100		100.0%
Finance, Insurance & Real Estate:	21,300		
Construction:	11,400		
Mining:	(included in services)		

	U.S.	*State*
Manufacturing Value Added ($ in millions, 1980):	773,441	3,545
Average Manufacturing Earnings ($/prod. hours, Jan. 1983):	—	6.81
Union Membership (%, 1980):	24.8	28.4
Work Stoppages (1,000 days idle) (1978):	36,922	75
(1979):	34,754	150
(1980):	33,289	131
(1981):	24,730	206
Unemployment (%, 1982):	9.5	10.2
Per Capita Income (% U.S., 1981, U.S. = $10,517):	100	99.5
State & Local Government Expenditures ($/cap., 1980):	1,622	1,754
State & Local Government Education Expenditures ($/cap., 1980):	588	580
Federal Aid to State & Local Government ($/cap., 1981):	407	506
Retail Sales ($ in billions, 1977):	724.1	3.0

NEWFOUNDLAND AND LABRADOR

PROVINCIAL AREA:	
Island of Newfoundland	112,299 km^2
Labrador	292,218 km^2
Total	404,517 km^2
- as % of Canada	4.1
POPULATION (1985)	579,700
- % of Canada	2.3
PRINCIPAL URBAN CENTRES:	St. John's (Capital) Grand Falls Corner Brook Stephenville Port aux Basques

	1983	1984	1985*	
LABOUR FORCE DATA				
Employment	174,000	176,000	177,000	7
Unemployment	40,000	45,000	48,000	7
Unemployment Rate (%)	18.8	20.5	21.3	7
Participation Rate(%)	52.1	52.9	53.3	7
Total Wages & Salaries	2,740	2,888	1,239	5
Average Weekly Wage ($)	384	401	426	f
- as % of Canada	92.1	92.4	95.1	

*See Notes.

PRINCE EDWARD ISLAND

PROVINCIAL AREA	5,657 km^2
- as % of Canada	0.1
POPULATION (JUNE, 1985)	127,000
- as % of Canada	0.5
PRINCIPAL URBAN CENTRES:	Charlottetown (Capital) Summerside

	1983	1984	1985*
LABOUR FORCE DATA			
Employment	48,000	48,000	48,000
Unemployment	7,000	7,000	7,000
Unemployment Rate (%)	12.2	12.9	12.2
Participation Rate (%)	60.2	60.2	62.1
Total Wages & Salaries ($ million)	585	614	264 5
Average Weekly Wage ($)	295	303	311
- as % of Canada	70.7	69.8	69.4

*See Notes.

NOVA SCOTIA

PROVINCIAL AREA:	55,491 km^2	
- as % of Canada:	0.6	
POPULATION (JUNE, 1985):	879,600	
- as % of Canada:	3.5	
PRINCIPAL URBAN CENTRES:	Halifax (Capital) Dartmouth Sydney New Glasgow Truro	Amherst Kentville Digby Yarmouth Bridgewater

	1983	1984	1985*	
LABOUR FORCE DATA				
Employment	320,000	337,000	335,000	7
Unemployment	49,000	51,000	56,000	7
Unemployment Rate (%)	13.2	13.1	14.3	7
Participation Rate (%)	57.4	59.3	58.8	7
Total Wages & Salaries ($ million)	5,151	5,633	2,451	5
Average Weekly Wage ($)	350	371	384	f
- as % of Canada	83.9	85.5	85.3	

*See Notes.

NEW BRUNSWICK

PROVINCIAL AREA:	73,436 km^2
- as % of Canada:	0.7
POPULATION (JUNE, 1985):	718,400
- as % of Canada:	3.1
PRINCIPAL URBAN CENTRES:	Fredericton (Capital) Saint John Moncton Edmundston Dalhousie Campbellton Bathurst Newcastle-Chatham

	1983	1984	1985*	
LABOUR FORCE DATA				
Employment	247,000	248,000	257,000	7
Unemployment	43,000	44,000	47,000	7
Unemployment Rate (%)	14.8	14.9	15.5	7
Participation Rate (%)	55.5	55.1	56.6	7
Total Wages & Salaries ($ million)	3,870	4,189	1,816	5
Average Weekly Wage ($)	370	391	403	f
- as % of Canada	88.7	90.1	90.0	

*See Notes.

NOTES TO THE TABLES ON THE ATLANTIC PROVINCES

*Data for 1985 are either forecasts, or apply to the month indicated by numbers (1 - January, 3 - March, etc.) or are cumulative over the period up to and including the month indicated by number.

p = preliminary

Data are adjusted for seasonal variation where relevant.

Data for 1983 and 1984 are annual totals or, for labour force data and average weekly earnings, are annual averages.

Sources: Statistics Canada.

Appendix B:

GDP By Province, State and Industry

Gross Domestic Product by Province and Industry (%)

Industry	Province and Year																											
	Canada				Ontario				Atlantic				Newfoundland				Prince Edward Island				Nova Scotia				New Brunswick			
	61	71	80	82	61	71	80	82	61	71	80	82	61	71	80	82	61	71	80	82	61	71	80	82	61	71	80	82
Agriculture	3.7	3.2	2.4	2.9	2.9	2.0	1.6	2.1	2.5	1.5	1.2	1.9	0.9	0.7	0.5	0.6	8.8	6.4	5.7	11.0	2.1	1.3	1.1	1.7	3.2	1.9	1.2	1.7
Forestry	0.9	0.8	0.7	0.6	0.4	0.3	0.3	0.2	1.4	1.2	0.9	0.7	2.3	1.3	0.9	0.8	0.0	0.0	0.0	0.0	0.6	0.6	0.5	0.3	2.1	2.0	1.6	1.2
Fishing	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0	2.2	1.7	1.5	1.7	2.8	2.1	2.0	2.5	3.8	3.0	2.9	3.1	2.5	2.0	1.9	1.9	1.0	0.8	0.5	0.6
Mining	3.7	3.8	3.0	2.5	2.9	2.0	1.1	0.7	3.8	4.8	4.2	3.6	11.2	13.4	11.6	6.5	0.0	0.0	0.0	0.0	2.9	1.8	2.2	2.9	0.8	3.0	2.0	2.8
Manufacturing	21.6	22.9	21.9	20.2	26.5	29.5	28.5	27.8	12.3	12.4	13.6	12.2	11.0	9.5	9.3	10.0	5.0	7.7	8.0	8.3	11.1	12.3	13.9	12.6	16.1	15.6	17.3	13.8
Construction	7.7	7.0	5.7	5.9	6.2	6.0	3.7	4.0	8.9	11.0	6.7	7.4	15.8	20.1	7.6	9.9	10.7	9.9	7.3	6.1	7.0	8.0	6.3	6.9	7.0	8.3	6.3	6.6
Utilities	2.2	2.6	3.2	3.5	2.0	2.3	2.6	2.9	1.9	3.0	4.8	4.9	2.2	3.9	9.8	10.7	1.3	2.6	2.2	2.1	2.0	2.6	3.1	3.5	1.7	3.1	3.9	3.4
Transportation Communication	8.7	9.5	10.8	11.0	6.9	7.0	7.7	7.5	10.1	11.0	13.0	12.8	9.2	10.0	12.7	11.9	11.3	10.7	9.6	8.9	8.9	10.0	11.6	11.8	12.4	13.8	15.5	15.5
Wholesale/ Retail Trade	11.9	11.8	12.6	11.8	11.6	11.4	12.0	11.4	12.7	13.2	13.0	12.7	13.4	12.2	14.0	13.3	12.6	13.7	14.7	12.5	12.0	13.0	13.2	11.9	13.3	14.2	14.3	13.5
Finance, Insurance, Real Estate	12.5	11.5	13.1	13.7	13.5	12.3	14.7	15.1	11.6	10.7	12.4	12.5	10.0	9.1	11.7	12.0	12.6	11.2	14.3	13.5	12.3	12.0	13.3	13.0	11.5	10.0	11.6	12.1
Community, Business and Personal Serv.	17.9	19.3	19.7	20.5	18.7	20.1	21.4	21.7	15.1	15.2	14.7	15.1	8.4	8.7	9.2	9.4	13.2	15.5	15.0	13.5	17.9	19.0	18.0	17.8	15.9	14.9	14.2	15.8
Public Admin./ Defence	9.6	7.3	6.9	7.3	9.2	7.2	6.4	6.5	18.3	14.1	13.2	14.5	13.3	9.1	10.6	12.8	21.4	18.9	20.1	21.1	21.9	17.8	15.0	15.7	15.8	12.5	11.6	13.0
Service Indus.	60.6	59.4	63.1	64.3	59.9	58.0	62.2	62.2	68.5	64.2	67.1	67.7	54.3	49.1	58.2	59.5	71.1	70.0	73.7	66.4	73.0	71.8	71.1	70.2	68.9	65.4	67.2	69.9
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: The Conference Board of Canada, Estimates.

GROSS PRODUCT BY INDUSTRY IN CONSTANT 1972 DOLLARS
($ millions)

	Massachusetts			New Hampshire			Rhode Island			Vermont		
	1979	1975	1972	1979	1975	1972	1979	1975	1972	1979	1975	1972
Total Gross Product	37,093	32,113	32,971	4,892	3,614	3,454	5,253	4,499	4,792	2,499	2,019	2,048
Farm	78	80	103	25	28	36	10	10	12	103	84	109
Mining	17	18	29	7	8	10	3	3	5	46	25	29
Construction	995	1,156	1,764	246	167	212	168	160	231	110	91	128
Manufacturing	10,493	7,978	8,305	1,605	1,007	1,053	1,729	1,315	1,394	756	512	505
Durable	6,979	4,916	4,938	1,017	588	580	1,169	856	**	577	374	362
Nondurable	3,514	3,061	3,368	588	418	473	559	458	**	179	139	143
Trade	6,312	5,665	6,006	880	658	596	875	774	846	414	338	345
Finance	6,363	5,926	5,685	690	526	474	793	722	673	281	245	255
Transportation	1,046	910[e]	989	93	97[e]	78	106	104	120	76	66	65
Communications	1,483	1,154	992	188	133	107	136	107	103	96	66	56
Public Utilities	806	876	871	110	103	96	102	114	126	59	60	58
Services	5,976	4,979	4,916	613	479	427	738	629	569	347	301	280
Government	3,523	3,372	3,312	434	409	364	592	560	713	245	243	224

**Withheld to avoid disclosure.

e - estimated.

Note: The U.S. Department of Commerce is the source of deflators for conversion from current to constant dollars. These deflators differ across industries.

Source: Federal Reserve Bank of Boston.

GROSS PRODUCT BY INDUSTRY IN CONSTANT 1972 DOLLARS
($ millions)

	New England			Connecticut			Maine		
	1979	1975	1972	1979	1975	1972	1979	1975	1972
Total Gross Product	77,812	65,658	66,356	22,951	19,102	18,925	5,124	4,305	4,165
Farm	386	382	481	73	81	107	96	100	114
Mining	87	72	99	46	25	29	2	4	5
Construction	2,447	2,501	3,578	710	701	1,000	218	226	243
Manufacturing	23,421	17,581	18,434	7,329	5,672	6,025	1,509	1,095	1,151
Durable	15,810	11,366	**	5,523	4,249	4,507	545	382	403
Nondurable	7,610	6,215	**	1,806	1,424	1,518	964	714	748
Trade	13,002	11,179	11,509	3,594	2,949	2,955	926	797	760
Finance	13,724	12,238	11,209	5,005	4,283	3,657	591	533	465
Transportation	1,996	1,757	1,810	505	425[e]	409	168	155	148
Communications	2,753	2,130	1,826	674	535	452	175	141	116
Public Utilities	1,673	1,707	1,686	484	437	428	112	112	107
Services	11,231	9,297	8,953	2,903	2,375	2,286	653	532	475
Government	7,093	6,812	6,772	1,627	1,618	1,578	671	610	581

**Withheld to avoid disclosure.

e = estimated.

Note: The U.S. Department of Commerce is the source of deflators for conversion from current to constant dollars. These deflators differ across industries.

Source: Federal Reserve Bank of Boston.

Appendix C:

Migration Patterns By State and Province

COMPONENTS OF POPULATION CHANGE—STATES: 1970–1980 AND 1980–1982

[In thousands, except percent. Total resident population. For composition of regions, see fig. 1, inside front cover. For explanation of methodology, see source. Minus sign (–) denotes decrease or net outmigration. See also *Historical Statistics, Colonial Times to 1970*, series C 25-75]

REGION, DIVISION, AND STATE	APRIL 1, 1970 TO APRIL 1, 1980					APRIL 1, 1980 TO JULY 1, 1982				
	Net change		Births	Deaths	Net total migration [2]	Net change		Births	Deaths	Net total migration [2]
	Number	Percent [1]				Number	Percent [1]			
United States	23,244	11.4	33,244	19,279	9,279	4,988	2.2	8,173	4,448	1,287
Regions:										
Northeast	73	.2	6,661	4,668	–1,918	321	.7	1,488	1,059	–108
North Central	2,275	4.0	9,032	5,510	–1,417	61	.1	2,129	1,144	–902
South	12,559	20.0	11,221	6,244	7,583	2,784	3.7	2,786	1,488	1,483
West	8,334	22.9	6,330	3,027	5,031	1,843	4.3	1,770	732	805
New England	561	4.2	1,607	1,135	28	145	1.2	366	258	37
Maine	131	13.2	161	107	76	9	.8	37	24	–5
New Hampshire	183	24.6	122	75	136	36	3.5	31	17	17
Vermont	87	15.0	72	44	38	5	.9	18	10	–3
Massachusetts	48	.8	737	553	–136	44	.8	163	127	7
Rhode Island	–3	–.3	123	93	–33	11	1.2	28	21	4
Connecticut	75	2.5	391	263	–82	48	1.5	89	69	17
Middle Atlantic	–426	–1.1	5,055	3,534	–1,947	176	.5	1,123	802	–145
New York	–680	–3.7	2,481	1,622	–1,542	101	.6	544	378	–65
New Jersey	194	2.7	981	674	–114	74	1.0	218	152	8
Pennsylvania	63	.5	1,593	1,238	–292	1	-	361	271	–88
East North Central	1,419	3.6	6,484	3,723	–1,312	–98	–.2	1,484	814	–788
Ohio	140	1.3	1,076	682	–343	–6	–.1	379	216	–187
Indiana	295	5.7	685	483	–87	–20	–.4	184	106	–107
Illinois	316	2.8	1,790	1,072	–402	222	.2	422	229	–171
Michigan	580	4.3	1,441	767	–294	–153	–1.7	321	170	–305
Wisconsin	288	6.5	662	406	18	58	1.3	168	91	–17
West North Central	856	5.2	2,579	1,617	–106	158	.9	648	382	–134
Minnesota	270	7.1	595	334	9	87	1.4	194	74	–22
Iowa	68	2.1	432	288	–68	–8	–.3	104	68	–33
Missouri	239	5.1	728	505	15	34	.7	173	110	–31
North Dakota	35	5.7	107	58	–11	17	2.8	28	12	3
South Dakota	25	3.7	117	66	–26	-	-	29	14	–15
Nebraska	64	4.7	246	149	–12	16	1.0	62	33	–13
Kansas	115	5.1	354	221	–18	44	1.9	93	49	-
South Atlantic	6,280	20.5	5,149	3,068	4,220	1,254	3.4	1,248	747	761
Delaware	46	8.4	88	49	7	8	1.3	20	11	–1
Maryland	293	7.5	568	331	85	48	1.1	138	78	–13
District of Columbia	–118	–15.8	109	77	–150	–7	–1.1	21	13	–13
Virginia	695	14.9	748	406	354	144	2.7	178	95	61
West Virginia	205	11.8	290	198	113	–2	–.1	84	45	–23
North Carolina	797	15.7	663	488	402	137	2.3	190	110	37
South Carolina	531	20.5	488	241	274	81	2.6	117	57	21
Georgia	675	19.1	662	429	442	178	3.2	205	100	71
Florida	2,996	43.5	1,121	669	2,722	669	6.9	306	239	601
East South Central	1,858	14.5	2,301	1,309	667	145	1.0	827	287	–86
Kentucky	440	13.7	568	336	208	8	.2	131	75	–50
Tennessee	665	16.9	664	383	284	60	1.3	150	68	–1
Alabama	450	13.1	619	348	180	49	1.3	140	78	–12
Mississippi	304	13.7	454	235	85	30	1.2	106	53	–23
West South Central	4,421	22.9	3,772	1,846	2,497	1,284	5.7	1,018	441	768
Arkansas	383	16.9	349	218	253	5	.2	82	50	–27
Louisiana	661	15.4	717	346	180	157	3.7	186	80	51
Oklahoma	484	16.2	415	274	295	152	5.0	120	64	85
Texas	3,031	27.1	2,291	1,010	1,760	1,051	7.4	630	246	667
Mountain	3,083	37.2	1,837	722	1,966	394	3.2	516	180	257
Montana	82	13.3	126	67	33	14	1.8	32	15	–3
Idaho	231	32.4	166	65	130	21	2.3	45	15	–6
Wyoming	137	41.3	73	31	93	32	8.8	23	7	16
Colorado	660	30.8	415	182	447	155	5.3	118	43	82
New Mexico	288	28.1	224	92	144	98	4.3	60	20	16
Arizona	843	53.1	406	174	712	142	5.2	115	48	73
Utah	492	37.9	329	76	149	82	3.3	84	18	37
Nevada	312	63.8	99	46	259	90	10.0	31	12	82
Pacific	5,251	19.6	4,493	2,305	3,063	1,249	3.8	1,254	553	548
Washington	719	21.1	548	305	476	113	2.7	157	73	29
Oregon	642	25.9	351	207	397	15	.5	97	49	–33
California	3,697	18.5	3,354	1,734	2,078	1,056	4.5	937	416	535
Alaska	99	32.8	78	15	37	36	6.0	22	4	18
Hawaii	195	25.3	163	44	76	29	3.0	41	11	–1

– Represents zero or rounds to zero. [1] 1970 to 1980 based on 1970 population; 1980 to 1982 based on 1980 population.
[2] Comprises net immigration from abroad, net interregional, intergovisional, or interstate migration, movement of persons in the Armed Forces and the "error of closure;" see text p. 2.

Source: U.S. Bureau of the Census, *Current Population Reports*, series P-25, No. 927, and unpublished data.

NET MIGRATION BETWEEN PROVINCES IN CANADA 1921 - 1981

	1921 1931	1931 1941	1941 1951	1951 1961	1961 1971	1971 1981	1921 1981
	-- Thousands --						
Newfoundland	-	-	-	(13.0)	(34.6)	(20.8)	(68.4)
Prince Edward Island	(9.1)	(2.6)	(13.6)	(10.6)	(5.7)	2.9	(38.7)
Nova Scotia	(58.2)	4.2	(37.0)	(35.5)	(43.5)	4.2	(165.8)
New Brunswick	(33.9)	(10.8)	(40.1)	(39.3)	(45.3)	6.4	(162.5)
Quebec	55.5	(1.8)	(17.1)	198.5	(142.6)	(234.1)	(141.6)
Ontario	164.3	79.5	270.1	701.8	236.1	96.4	1355.4
Manitoba	(7.3)	(43.8)	(65.5)	(5.7)	(64.2)	(69.1)	(255.6)
Saskatchewan	15.4	(148.7)	(202.2)	(83.1)	(123.5)	(50.5)	(595.6)
Alberta	39.5	(34.5)	(15.2)	125.9	30.0	244.9	390.6
British Columbia	119.7	85.7	224.7	244.1	192.7	(214.9)	652.0

Note: Parentheses denote a net loss in population.

Source: I. B. Anderson, Internal Migration in Canada 1921 - 1961. Economic Council of Canada Staff Study No. 13, 1966. Statistics Canada 91-210.

Appendix D:

Exchange Rates

Annual Average Dollar Exchange Rate (1965-1986)

	Price of U.S. dollar in Canadian Cents	Price of Canadian Dollar in U. S. Cents
1965	107.80	92.76
1966	107.73	92.82
1967	107.87	92.70
1968	107.75	92.81
1969	107.68	92.87
1970	104.40	95.79
1971	100.98	99.03
1972	99.05	100.96
1973	100.01	99.99
1974	97.80	102.25
1975	101.73	98.30
1976	98.61	101.41
1977	106.35	94.03
1978	114.02	87.70
1979	117.15	85.36
1980	116.90	85.54
1981	119.88	83.42
1982	123.40	81.04
1983	123.20	81.17
1984	129.48	77.23
1985	136.52	73.25
1986	138.94	71.97

Source: Bank of Canada.

Appendix E:

Government Assistance Programs

State High-Technology Programs by Type*

State	HTD	TF	HTE	LTA	CPA	GID
Alabama	—	—	—	—	—	1
Alaska	—	—	—	—	2	—
Arkansas	—	—	—	2	1	—
Arizona	—	—	1	1	1	1
California	1	—	1	1	—	—
Colorado	1	1	—	1	—	1
Connecticut	3	—	—	1	1	1
Delaware	—	—	—	—	—	1
Florida	3	—	1	—	—	3
Georgia	1	—	2	—	—	—
Hawaii	1	—	—	—	—	—
Idaho	—	—	—	2	—	1
Illinois	2	1	—	2	1	—
Indiana	1	—	1	—	—	—
Iowa	—	1	—	—	—	—
Kansas	—	1	—	—	—	1
Kentucky	—	—	—	1	1	1
Louisiana	—	1	—	—	1	—
Maine	—	—	—	—	2	2
Maryland	—	1	—	2	3	—
Massachusetts	1	—	1	1	1	1
Michigan	8	—	—	1	1	—
Minnesota	—	—	1	—	—	1
Mississippi	1	—	—	1	1	1
Missouri	1	—	1	2	2	2
Montana	—	—	—	—	—	1
Nebraska	—	—	—	1	—	1
Nevada	—	—	—	—	—	1
New Hampshire	—	—	—	—	—	1
New Jersey	—	1	—	—	—	—
New Mexico	2	—	1	—	—	—
New York	2	—	—	1	2	—
North Carolina	1	—	2	—	—	1
North Dakota	—	—	—	—	1	1
Ohio	1	—	—	—	2	1
Oklahoma	—	—	—	—	—	1
Oregon	—	—	—	—	—	1
Pennsylvania	2	—	1	1	1	—
Puerto Rico	—	—	—	2	1	—
Rhode Island	1	—	—	1	1	—
South Carolina	—	1	—	1	—	—
South Dakota	—	—	—	—	—	1
Tennessee	2	—	1	—	—	—
Texas	1	—	—	1	—	2
Utah	—	—	—	—	—	1
Vermont	—	—	—	—	1	—
Virginia	1	1	—	—	—	1
Washington	1	—	1	—	—	—
West Virginia	—	—	—	1	—	1
Wisconsin	—	—	—	—	—	3
Wyoming	—	—	—	—	—	1
Totals	38	9	14	28	27	37

*HTD = high-technology development; TF = task force, HTE = high-technology education, LTA = technical assistance, CPA = capital promotion/assistance, GID = general industrial development.

SOURCE: Office of Technology Assessment.

	Trade Missions	Trade Shows	Marketing Assistance	Market Development	Export Education	Investment Information	Investment Missions	Advertising	International Tourism	Port Development	Total Number of Programs or Activities
ALABAMA	X		X	X	X	X	X	X		X	8
ALASKA	X	X	X	X	X		X	X		X	8
ARIZONA	X	X	X	X	X	X			X		7
ARKANSAS	X	X	X	X	X	X	X	X		X	9
CALIFORNIA	X	X	X	X	X	X	X	X			8
COLORADO		X	X	X	X	X		X			6
CONNECTICUT	X	X	X	X	X	X	X				7
DELAWARE	X	X	X	X	X	X	X	X	X	X	10
FLORIDA	X	X	X	X	X	X	X	X	X		9
GEORGIA	X	X	X	X	X	X	X	X	X	X	10
HAWAII	X	X	X	X	X	X	X	X	X		9
IDAHO	X	X	X	X	X			X			6
ILLINOIS	X	X	X	X	X	X	X	X	X	X	10
INDIANA	X	X	X	X	X	X	X	X	X	X	10
IOWA	X	X	X	X	X	X	X	X			8
KANSAS	X	X	X	X	X	X	X	X			8
KENTUCKY	X	X	X	X	X	X	X	X	X	X	10
LOUISIANA	X	X	X		X			X			5
MAINE	X	X	X	X	X	X	X	X	X	X	10
MARYLAND	X	X	X	X	X	X	X	X	X	X	10
MASSACHUSETTS	X	X	X	X	X	X	X		X	X	9
MICHIGAN	X	X	X	X	X	X	X	X			8
MINNESOTA	X	X	X	X	X	X		X			7
MISSISSIPPI	X	X	X		X	X	X	X	X	X	9
MISSOURI	X	X	X	X	X	X	X	X	X	X	10
MONTANA	X	X	X	X	X	X	X	X	X	X	10
NEBRASKA	X	X	X	X	X	X			X		7
NEVADA			X								1
NEW HAMPSHIRE			X	X	X	X	X				5
NEW JERSEY	X	X	X	X	X	X	X	X	X		9
NEW MEXICO	X	X	X	X	X	X				X	7
NEW YORK	X	X	X	X	X	X	X	X	X		9
NORTH CAROLINA	X	X	X		X	X	X	X	X	X	9
NORTH DAKOTA	X	X	X								3
OHIO	X	X	X	X	X	X	X	X	X	X	10
OKLAHOMA	X	X	X	X	X	X	X	X	X	X	10
OREGON	X	X	X	X	X	X		X			7
PENNSYLVANIA	X	X	X	X	X	X	X	X	X	X	10
RHODE ISLAND	X	X	X	X	X	X		X		X	8
SOUTH CAROLINA	X	X				X	X	X			5
SOUTH DAKOTA	X	X	X	X	X	X			X		7
TENNESSEE	X	X	X	X	X	X	X	X			8
TEXAS	X	X	X	X	X	X	X				7
UTAH			X	X	X	X			X		5
VERMONT	X	X	X		X	X	X				6
VIRGINIA	X	X	X	X	X	X	X	X	X	X	10
WASHINGTON	X	X	X	X	X	X	X		X	X	9
WEST VIRGINIA	X		X		X	X	X	X			6
WISCONSIN	X	X	X	X	X	X					6
WYOMING	X	X									2
TOTALS:	46	45	48	41	46	44	35	35	25	22	Mean 7.74

1985 STATE SMALL BUSINESS ACTIVITIES

X = EXISTING
X¹ = EXISTS BY EXECUTIVE ORDER
X² = MORE THAN ONE EXISTS
P = PROPOSED/PENDING
O = PROPOSED AND DEFEATED/DROPPED
• = SPECIFIC WOMEN'S PROGRAM

	SUPPORT STRUCTURES				PROGRAMS AND ASSISTANCE											LEGISLATION										
	State Small Business Office	One-Stop Business License Center	Gov's Advisory Committee/Task Force	Legislative Committee/Subcommittee	Advocacy Program	Entrepreneurship Education	Small Business Debt Loan Program	Export Promotion	State Equity and Investment Incentives	Minority Business Program	Procurement Assistance	Contracting-Out Measures	Pension Fund Investment Activity	Innovation Program	Women's Business Assistance	Bad Check/Treble Damage Law	Regulatory Flexibility Act	Equal Access to Justice Act	Utility Competition Measures	Prompt Payment Act	Paperwork Reduction Act	Worker's Right to Know Act	Enterprise Zone Act	Small Business Incubator Legislation	Nonprofit Competition Measures	Health Care Cost Containment	Interstate Banking Laws
ALABAMA		X				X	X	X		X	X		X	X		X								X			
ALASKA							X		X		X		X	X				X					X				X
ARIZONA			X¹				X	X			X	X				X		X		X							X
ARKANSAS				X	X		X			X				X						X			X	X			
CALIFORNIA	X		X¹	X	X		X	X		X	X			X	X	X	X	X		X	X	X	X				
COLORADO	X	X	X		X	X	X	X		X		X			X	X	X	X		X				O		X	
CONNECTICUT	X					X	X	X		X	X	X		X	X			X		X	X	X				X	X
DELAWARE	X	X		X		X		X			X								X	X	X¹	X	X				
DISTRICT OF COLUMBIA	X	X	X			X	X	X		X	X			X		X	X			X	X	X		P		X	P
FLORIDA	X		X	X	X	X	X	X	X	X	X			X	X	X	X	X		X	X	X	X			X	X
GEORGIA			X	X				X		X	X			X						X			X				
HAWAII	X¹		X				X							X		X			X	X¹							
IDAHO								X			X					X		X									X
ILLINOIS	X	X	X	X	X		X	X	X	X	X			X	•	X	X	X		X	X	X	X	P		X	P
INDIANA			X	X	X	X	X	X	X	X	X			X		X	X			X	X		X	X¹			X
IOWA	X	X		X	X	X	X	X	X	X	X		X	X	X	X	P	X		X	X	X	X	X	O	X	
KANSAS	X				X	X	P	P	P	X	X		P	X	X	P	X	X		X		X	X	X		X	X
KENTUCKY	X	X	X	X	X	X	X	X		X	X						X	X		X	X	O	X				X
LOUISIANA	X		X			X	X	X	X	X	X				•			X		X	X						
MAINE	X	P	X¹		O	X	X	X	X							X	X¹	O		X		X					X
MARYLAND	X						X	X		X	X			X	X			X		X		X	X			X	X
MASSACHUSETTS	X		X	X		X	X		X	X	X			X	X		P			X			P			X	X
MICHIGAN	X	X	X	X	X	X	X	X	X	X	X	X		X	•	X	X	X		X	X		X	X	X		P
MINNESOTA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X		X		P	P
MISSISSIPPI	X					X	X	X	X		X		X	X								X	X	X			
MISSOURI	O	O	O	X	O		O	X	O	X				X	•	X		O		X	O		X	O		O	O
MONTANA	X	X	X		X	X	X	X	X		X	X		X	O	X	O			X		X				O	
NEBRASKA	X						P	P								P				P		P	P			X	P
NEVADA			P		X		X	X		P	P	X				X				X			X				X
NEW HAMPSHIRE			P	X		X	X	X			X			O		X	X	O		O		X	O			X	O
NEW JERSEY	X				X	P	X	X	X	X	X	X		X	X		P	X	P	X	X	X	X	P			
NEW MEXICO							X		X	X					X					X							
NEW YORK	X	X	X	X	X	X	X	X		X	X		X	X	•	P	X	P		X	X			X		X	X
NORTH CAROLINA	X		X	X	X	X		X		X	X	X		X	•	X		X		X				X		X	X
NORTH DAKOTA	X		X		X	X	X	X	P		X			X				X	X	X	X	X		X	X		
OHIO	X	X	X	X	X		X	X	X	X	X	X		X	•	X	X	X	X	X	X	X	X	X		P	P
OKLAHOMA														X						X			X				
OREGON		X	X			X	X	X	X					X		X	X	X		X	X	X		X		X	X
PENNSYLVANIA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	•		X	X		X	X	X	X¹	X		X	
RHODE ISLAND	X		X	X	X	X	X		X	X	X	X	X	X		X	X	X	O	X	X	X				X	X
SOUTH CAROLINA	X		X			P	X	X		X	X			X	X	P				X							
SOUTH DAKOTA	X	P	X	X		X¹	X	X	P		X	X	P			X	X	X	X	X		X				X	X
TENNESSEE	X		X		X	X		X	X	X	X			X		X		P	P			X	X		X	X	X
TEXAS	X				X		X			X	X			X			X				X		X				
UTAH	X	P	X¹	P	P		P	X	X		P	X	X	X		X	X	X		X								X
VERMONT	X¹	X¹					X		O				O				X	O		P	O	O	X	X		X	
VIRGINIA	X	X	X	X	X	X	X	X		X	X	X¹		X	X	X		X		X	X¹	X	X	X			X
WASHINGTON		X	X	X	X	X		X		X	X		X	X	•		X			X	X	X					X
WEST VIRGINIA	X	X			X	X	X	X		X	X		X	X	X	X						X		X		X	
WISCONSIN	X	X	X	X	X		X	X		X	X			X	•	P	X	P	P	P	X			X			P
WYOMING	X		X			X	X		X			X	X							X							
PUERTO RICO	X	X		X			X	X	X	X	X					P							X				
VIRGIN ISLANDS	X			X				X		X										X							

State Services to Business and Industry

Region & State	Information services: General information services	Keeps inventories	Issues directories	Makes special community or economic studies	"One stop" business permitting	Technical services: Engineering	Statistical	Legal	Architectural	Accounting	Labour services: Assists labour	Trains labour
New England												
Connecticut	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes
Maine	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No	Yes	Yes
Massachusetts	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
New Hampshire	Yes	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes
Rhode Island	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes
Vermont	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes
Middle Atlantic												
New Jersey	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	No	Yes
New York	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Pennsylvania	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes
East North Central												
Illinois	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes
Indiana	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes	Yes
Michigan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes
Ohio	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Wisconsin	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	Yes
West North Central												
Iowa	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes
Kansas	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	No	Yes
Minnesota	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Missouri	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Nebraska	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes
North Dakota	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes
South Dakota	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes
South Atlantic												
Delaware	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes
Florida	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes
Georgia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes
Maryland	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
North Carolina	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes
South Carolina	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes
Virginia	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Yes
West Virginia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
East South Central												
Alabama	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes
Kentucky	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes
Mississippi	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Tennessee	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes
West South Central												
Arkansas	No	No	No	No	No	No	No	No	No	No	No	No
Louisiana	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes
Oklahoma	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	Yes	Yes
Texas	Yes	Yes	Yes	No	Yes	No	Yes	No	No	No	Yes	Yes
Mountain												
Arizona	Yes	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes
Colorado	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes
Idaho	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Montana	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes
Nevada	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Yes
New Mexico	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Yes
Utah	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes
Wyoming	Yes	Yes	Yes	Yes	No	No	No	No	Yes	No	No	No
Pacific												
Alaska	No	No	No	No	No	No	No	No	No	No	No	No
California	Yes	Yes	No	Yes	Yes	No	Yes	No	No	No	Yes	Yes
Hawaii	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes
Oregon	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes
Washington	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Puerto Rico	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No	No

Source: Council of State Governments, Economic Development: A Survey of State Activities, POB 11910, Lexington, Kentucky, 1981.

Summary of Government-Sponsored
Plans for Financial Assistance to New Industry by State and Region, July 1982

Region & state	Credit corporation	State industrial finance authority: Mortgage insurance programme	State industrial finance authority: Lending programme	Local bond issues: Revenue	Local bond issues: General obligation	Tax concessions
New England						
Connecticut	Yes	Yes	Yes	Yes	No	Yes
Maine	No	Yes	Yes	Yes	No	Yes
Massachusetts	Yes	Yes	Yes	Yes	No	Yes
New Hampshire	Yes	Yes	Yes	No	No	No
Rhode Island	Yes	Yes	Yes	Yes	No	Yes
Vermont	Yes	Yes	Yes	Yes	No	Yes[a]
Middle Atlantic						
New Jersey	No	Yes	Yes	Yes[b]	Yes[b]	Yes
New York	Yes	Yes	Yes	Yes	No	Yes
Pennsylvania	Yes	No	Yes	Yes	No	Yes
East North Central						
Illinois	Yes	No	Yes	Yes	No	Yes
Indiana	Yes	Yes	Yes	Yes	No	Yes[c]
Michigan	Yes	Yes	Yes	Yes	No	Yes[d]
Ohio	No	Yes	Yes	Yes	No	Yes
Wisconsin	No	No	No	Yes	No	No
West North Central						
Iowa	Yes	No	No	Yes	No	Yes
Kansas	Yes	No	No	Yes	No	Yes
Minnesota	No[c]	No	Yes	Yes	Yes	Yes
Missouri	Yes	Yes	Yes	Yes	Yes	Yes
Nebraska	Yes	No[c]	No[c]	Yes	No	Yes
North Dakota	Yes	Yes	Yes[e]	Yes	Yes	Yes
South Dakota	Yes	No[c]	No[c]	Yes	No	Yes
South Atlantic						
Delaware	No	Yes	Yes	Yes	No	Yes
District of Columbia	No	No	No	No	No	No
Florida	Yes	No	No	Yes	Yes[f]	Yes
Georgia	Yes	No	No	Yes	No	Yes[g]
Maryland	Yes	Yes	Yes	Yes	No	Yes
North Carolina	Yes	No	No	Yes	No	No
South Carolina	Yes	No	No	Yes	No	Yes
Virginia	No	No	No	Yes	No	No
West Virginia	No	No	Yes	Yes	No	Yes
East South Central						
Alabama	No	No	Yes[h]	Yes	Yes[i]	Yes
Kentucky	Yes	No	Yes	Yes	No	Yes
Mississippi	Yes	Yes	No	Yes	Yes	Yes[j]
Tennessee	No	No	No	Yes	Yes	Yes
West South Central						
Arkansas	Yes	No	No	Yes	Yes	Yes
Louisiana	No	No	No	Yes	Yes	Yes
Oklahoma	No	No	Yes	Yes	Yes	Yes
Texas	No	No	Yes	Yes	No	No
Mountain						
Arizona	No	No	No	Yes	No	No
Colorado	No	No	Yes	Yes	No	Yes
Idaho	No[c]	No	No	Yes	No	Yes
Montana	Yes	No	Yes	Yes	No	Yes
Nevada	No	No	No	Yes	No	No
New Mexico	No[c]	No	No	Yes	No	Yes
Utah	No	No	No	Yes	No	No
Wyoming	No	No	No	Yes	No	No
Pacific						
Alaska	Yes	No	Yes	No	No	No
California	No	Yes	Yes	Yes	Yes	No
Hawaii	No[c]	No[k]	No[k]	Yes	Yes	Yes
Oregon	No	No	Yes	Yes	No	Yes
Washington	No	No	Yes[l]	Yes	Yes	No

a Property tax stabilisation may be available, as well as limited property tax exemption. b Pollution control projects only. c Corporation authorised, but none has been formed as yet. (In some of these states local private corporations can provide this type of financial assistance.) d Municipalities can offer property tax abatements to companies building or expanding facilities in urban renewal areas, as well as in areas "in need of rehabilitation." e Financing is limited to projects which would convert natural resources to energy. f For public infrastructure projects only. g Limited to purchases of machinery and equipment for new and expanded plant facilities which may be exempt from state sales taxes if used directly in manufacturing. In addition, over one third of Georgia counties exempt inventories from the local personal property tax. h Limited to grants to public subdivisions for industrial site preparation. i Only municipalities in 18 counties. j Property tax exemption may be available in certain towns. k The state has no finance authority as such, but similar programmes are available. l Provides funds for site improvements for industrial purposes only.

Source: Department of Commerce of the State of New York.

BIBLIOGRAPHY

BOOKS AND ARTICLES

Academy for Contemporary Problems. Revitalizing the Northeast Economy. Washington D.C.:Economic Development Administration, U.S. Department of Commerce, (1977).

Acheson, T.W. "The National Policy and Industrialization of the Maritimes 1880 - 1910." Acadiensis, (Autumn, 1972)

Archibald, Bruce. "The Development of Underdevelopment in the Atlantic Provinces." an unpublished M.A. Thesis, Dalhousie, 1971.

Armstrong, J.H. and J.R. Mullin. "The role of Incubator Industries in the Local Economy: The Westfield, Massachusetts Experience." The Northeastern Journal of Business and Economics, Vol.11, No.1 (1984).

Atlantic Business, "Top 100." Atlantic Business, Vol.4, No.4 (1985).

APEC Background Paper on Venture Capital In Atlantic Canada.

Atlantic Provinces Economic Council "New England/Atlantic Provinces Economies." APEC Newsletter, Vol.24, No.2 (1980), 2.

Atlantic Provinces Economic Council. An Analysis of the Reorganization for Economic Development:Background and Policy Directions. Halifax: APEC, 1982.

Atlantic Provinces Economic Council. The Atlantic Economy: Third Annual Review. Halifax: APEC, 1969.

Atlantic Provinces Economic Council. Local Initiatives for Economic Development. Halifax: APEC, 1983.

Atlantic Provinces Economic Council, "The Case For Regional Development: Briefing Notes For A Presentation to the Council of Maritime Premiers Management Conference." May 23, 1985.

Ayers, Wayne. "Economic Revitalization of New England and Prospects for the Eastern Provinces: Paper presented to Tri-Regional Seminar." Boston, May 3, 1984.

Baribeau, M.B. "Economic Update." Report, The New England Council Inc., Sept. 1985.

Baribeau, M.B. "Maintaining New England's Venture Capital Flow." Report, The New England Council Inc., July, 1985.

Baron,Paul A. The Political Economy of Growth. New York: Monthly Review Press, 1957.

Barovick, R.L. "New England's Export Involvement is Higher Than National Average." Business America, Vol.17, No.20 (1983).

Barrett, Gene. "Perspectives on Dependency and Underdevelopment in the Atlantic Region." Canadian Review of Sociology and Anthropology, Vol. 17, NO. 3 (1980), 273-285.

Batra, R. and G.W. Scully. "Technical progress, Economic Growth, and the North South Wage Differential." Journal of Regional Science, Vol. 12 No. 3 (1972), 375-386.

Bickerton, James. "Underdevelopment and Social Movements in Atlantic Canada: A Critique." Studies in Political Economy: A Socialist Review, (Fall, 1982), 191.

Blomstrom, Magnus, and Bjorn Hettne. Development Theory in Transition, Bath: Pitman Press, 1984.

Bradbury, Katharine L. "Prospects for Growth in New England: The Labor Force." The New England Economic Review, (Sept./Oct., 1985), 55.

Brown, L.E. "A Quality Labour Supply." New England Economic Review, (July/Aug., 1981), 19-36.

Brown, L.E. "Can Hightech Save The Great Lakes?" New England Economic Review, (Nov./Dec., 1983), 19-33.

Brown, L.E. "Conflicting Views of Technological Progress and the Labour Market." New England Economic Review, (Jul./Aug., 1984), 5-16.

Brown, L.E. "High Technology and Business Services." New England Economic Review, (July/Aug., 1983), 5-16.

Brown, L.E. "How Different are Regional Wages?" New England Economic Review, (Mar./Apr., 1984), 40-47.

Brown, L.E. "How Much Government is Too Much?" New England Economic Review, (Mar./Apr., 1981), 21-34.

Brown, L.E. "Narrowing Regional Income Differentials." New England Economic Review, (Sept./Oct., 1980), 35-56.

Brown, L.E. "Narrowing Regional Income Differentials II." New England Economic Review, (Nov./Dec., 1980), 40-62.

Brown, L.E. "Regional Unemployment Rates." New England Economic Review, (July/Aug., 1978), 5-26.

Brown, L.E. "The New England Economy and the Development of High Technology Industries." New England Economic Indicators, (Aug., 1984), A3-A6.

Brown, L.E. "Two Years of Stagnation, A Regional Perspective." New England Economic Review, (Sept./Oct., 1982), 35-44.

Brown, L.E., and J.S. Hekman. "New England's Economy in the 1980's." New England Economic Review, (Jan./Feb., 1981), 5-16.

Brown, L.E., and Sarah Gavian. "The Importance of Defence To New England's Economy." New England Economic Indicators, (Oct., 1981), A3-A6.

Browne, Lynn E. "High Technology and Regional Development." New England Economic Indicators, (Apr. 1984).

Boadway, Robin, and Frank Flatters. "Efficiency and Equalization Payments in a Federal System of Government: A Synthesis and Extension of Recent Results." The Canadian Journal of Economics, Vol.15, No.4 (1983), 613-33.

Borts, George H. "The Greenhouse Program: Is It Economically Feasible and Justifiable?" The Northeast Journal of Business and Economics, Vol.4 No.2 (1984).

Brzustowski, T.A. "University-Industry Partnership: The Untypical Canadian Experience." Address delivered July 16 at the Third International Meeting of University Administrators, University of Waterloo, 1984.

Cardoso, Fernardo. "Associated Dependent Development: Theoretical and Practical Implications." in Authoritarian Brazil. Alfred Stefan (ed.). New York: Yale University Press, (1973), 148 - 176.

Charm, Robert E. "Is Dukakis Taking Credit Where Credit's Not Due?" New England Business, July 6, 1987.

Coffey, William, and Marco Polese. "Local Development: Conceptual Bases and Policy Implications." Regional Studies, forthcoming, 1984.

Collins, L.S. The U.S. Economy to 1990. New York: The Conference Board Inc., 1985.

Coupe, J.D. "County Income Patterns In Maine and New England." Maine Business Indicators, Vol.30, No.4 (1985).

Courchene, Tom. "Interprovincial Migration and Economic Adjustment." Canadian Journal of Economics, 3 (1970), 550-576.

Courchene, Tom. "Alternative Regional Development Strategies in a Federal State." in Regional Poverty and Change. Ottawa: Canadian Council on Rural Development, (1976), 91-206.

Courchene, Tom. "A Market Perspective on Regional Disparities." Canadian Public Policy, Vol.7, No.4 (1981), 506-518.

Courchene, Tom, and James Melvin. "Canadian Regional Policy: Lessons from the Past and Prospects for the Future." Canadian Journal of Regional Science, Vol.9, No.1 (1986), 49-67.

Deak, E.J. and E. Heinze. "New England and the Southeast: Interregional Effects on Regional Change." The New England Journal of Business and Economics, Vol.4, No.2 (1978), 1-15.

Dholakai, N., and P. Magiameli. "Appraisal of Rhode Island's Strategy for Industrialization." The Northeast Journal of Business and Economics, Vol.10, No.4, (1984), 12-28.

The DPA Group Inc. "Comparison Between the Economies of Maine and New Brunswick." Fredericton: The DPA Group, April, 1987.

Dos Santos, Theotonio. "The Crisis of Development Theory and the Problem of Dependency in Latin America." in Underdevelopment and Development in the Third World Today. Henry Bernstein. ed. Middlesex: Penguin Books, (1973), 57-80.

Dow, Sheila. "Money and Regional Development." Studies in Political Economy, No.23, (1987).

Dunham, Constance R. "Interstate Banking and The Outflow of Local Funds." New England Economic Review, (Mar./Apr. 1986), 13.

"A Survey of New England: A Concentration of Talent." The Economist, Aug. 8, 1987.

Federal Reserve Bank of Boston. Economic Research on New England: A Selective Bibliography 1965-1977. Boston: Federal Reserve Bank of Boston, 1977.

Federal Reserve Bank of Boston. Gross State Product New England 1969-1982. Boston: Federal Reserve Bank of Boston, 1984.

Federal Reserve Bank of Boston. New England Economic Almanac 1982. Boston: Federal Reserve Bank of Boston, 1982.

Feenberg, D.R., and H.S. Rosen. "State Personal Income and Sales Taxes." Working Paper Series, National Bureau of Economic Research, June, 1985.

Ferguson, Ronald F., and Helen F. Ladd. Economic Performance and Economic Development Policy in Massachusetts. Cambridge: John F. Kennedy School of Government, Harvard University, May, 1988.

Financial Post 500. 1985.

Flynn, P. M. "Lowell: A HighTechnology Success Story." New England Economic Review, (Sept./Oct.,1984), 39-49.

Francis, D.R. Report to the 11th Conference of the New England Governors and Eastern Canadian Premiers on the Tri-Regional Economic Linkage Seminar. May, 1983.

Frank, A.G. Capitalism and Underdevelopment in Latin America. New York: Monthly Review Press, 1976.

Fransman, Martin. Technology and Economic Development. Bolder: Westview Press, 1986.

Friedmann, John. "A General Theory of Polarized Development." in Niles Hansen ed. Growth Centers in Regional Economic Development. New York: Free Press (1967), 82-101.

Freedman, Robert ed. Marx on Economics. Harmondworth, Middlesex: Penguin Books Limited, 1961.

Frost, James. "The Nationalization of the Bank of Nova Scotia." Acadiensis, Vol.7, No.1, (1982).

George, Roy E. A Leader and a Laggard: Manufacturing Industry in Nova Scotia, Quebec and Ontario. Toronto: University of Toronto Press, 1970.

Hall, F., and W.P. Watkins. Co-operation. Manchester: Co-operative Union Limited, 1937, p. 87.

Harris, R.C., and J. Warkent. in Canada Before Confederation: A Study in Historical Geography, New York: Oxford University Press, 1974.

Hekman, John S. "The Future of High Technology Industry in New England: A Case Study of Computers." New England Economic Review, (Jan./Feb.,1980), 5-17.

Hekman, John S. "New England's High Technology Industry Is Here To Stay." New England Economic Indicators, (Mar., 1981), A5-A9.

Hekman, John S., and John S. Strong. "The Evolution of New England Industry." The New England Economic Review, (Mar./Apr.), 1981.

Howell, Colin D. "Historical Reflections on the Industrial Hope in the Maritimes." APEC/DRIE Strategy Session, March, 1986.

Howell, James M. "The Economic Renaissance of New England." Economic Impact, Vol.51. (1983).

Howell, James H., and Linda D. Frankel. "Economic Revitalization and Job Creation in America's Oldest Industrial Region." Summary of remarks from Public Policy Week, American Enterprise Institute for Public Policy Research, Washington, (Dec. 2, 1985).

Howell, James M. "Summary of Remarks Before The International Experts Conference on Venture Capital and New Entrepreneurship." Istanbul, (May 21-22, 1987).

Hoy, John C. "The Next Threshold: Higher Skills and the New England Economy." New England Journal of Public Policy (Winter, 1986)

Innis, Harold. Essays in Canadian Economic History. Toronto: University of Toronto Press, 1957.

Isard, Walter. Introduction to Regional Science. Englewood Cliffs, New Jersey: Prentice Hall Inc., 1975.

Jackson, R. "Small Firms, High Technology and the Use of Industrial Revenue Bonds." The Northeast Journal of Business and Economics, Vol.11, No.1 (Fall/Winter, 1984), 20-34.

Jenkins, Glenna. "Regional Development in Nova Scotia: Theory, Policy and Practice 1957 - 1983", Diss. Dalhousie 1984.

Keynes, John Maynard. The General Theory of Employment Interest and Money, New York: MacMillan Press Limited, 1974.

Kindleberger, Charles, Economic Development. 2ed. New York: Mcgraw-Hill Book Company, 1958.

Koveos, P.E., and L.C. Chugh. "New England Employment Cycles: 1947-1977." The New England Journal of Business and Economics, Vol.6, No.1 (1979), 1-14.

Laclau, E. "Feudalism and Capitalism in Latin America." New Left Review, No. 67, 1971.

Levine, A.L. Retardation and Entrepreneurship. Fredericton: Atlantic Provinces Economic Council, 1965.

Lewis, W.A. Theory of Economic Growth. London: Allen and Unwin, 1955.

Little, J.S. "Foreign Direct Investment in New England." The New England Economic Review, (Mar./Apr., 1985), 48-57.

Little, J.S. "Foreign Direct Investment in The United States: Recent Locational Choices of Foreign Manufacturers." The New England Economic Review, (Nov./Dec., 1980), 5-22.

Little, J.S. "The Industrial Composition of Foreign Direct Investment in The United States and Abroad: A Preliminary Look." The New England Economic Review. (May/June, 1984), 38-48.

Losch, August. "The Nature of Economic Regions." Southern Economic Journal, (August, 1963).

Lyle, J.F. "Investment Criteria for Venture Capital." Speaker's notes, Prepared for The Atlantic Canada Council of Chief Executive Officers, June 20, 1985.

MacDonald, D. "Incubator Fever." New England Business, Vol.7, No.4 (1985).

Mackintosh, W.A. "Innis on Canadian Economic Development." Journal of Political Economy, (June, 1955).

Marshall, Alfred. Principles of Economics, New York: MacMillan Press Limited, 1977.

Matthews, Ralph. The Creation of Regional Dependency. Toronto: University of Toronto Press, 1983.

Matthews, Ralph. "Two Alternative Explanations of the Problems of Regional Dependency in Canada." Canadian Public Policy, (1981).

Maxwell, Judy, and S. Currie. Partnership for Growth: Corporate University Cooperation in Canada. Corporate Higher Education Forum, 1984.

McCarten, Bill. "Industrial Policy: A Study In Political Economy." APEC Working Paper, 1982.

McGurrin, Lisa. "What Happens After Full Interstate Banking Didn't?" New England Business, (Nov. 17,1986).

McIntosh, B. "Employment Subsidies: An Examination of TJTC and State Expenditures In New England." The Northeast Journal of Business and Economics, Vol.10, No.2 (1984), 35-50.

McNess, S.K. "Economic Growth: How Much Is Too Much?" New England Economic Review, (Jan./Feb. 1984), 15-22.

McNess, S.K. "The Current Expansion in Historical Perspective" New England Economic Review, (Nov./Dec., 1984), 5-11.

McNertney, E.M. "The Effect of State and Local Taxation on the Location of Industrial Employment: A Theoretical and Empirical Inquiry." The New England Journal of Business and Economics, (Spring, 1980), 13-22.

Mead, A.C. "A Simultaneous Equations Model of Migration and Economic Change in New England." The New England Journal of Business and Economics, Vol.8 ,No.2 (Spring, 1982), 25-36.

Mead, A.C. and G.A. Ramsay. "Regional Performance During Recession." The New England Journal of Business and Economics, Vol.8, No.1 (1981), 52-64.

Mead, A.C. "Regional Responses to Business Cycles: The New England Experience." The Northeast Journal of Business and Economics, Vol.11, No.2 (1985), 27-35.

Meade, J. E. A Neo-classical Theory of Economic Growth, 2ed., New Jersy: Oxford University Press, 1963.

Merenda, Michael J. "An Empirical Investigation of Facility Location Decisions for New Hampshire: Executive Experiences and Perceptions." The New England Journal of Business and Economics, Vol.8, No.2 (1982).

Merenda, Michael J. "New Hampshire's High Technology Industry: Some Preliminary Observations and Findings." The New England Journal of Business and Economics, Vol.9, No.2 (1983).

Munnell, A.H. "Employee Benefits and The Tax Base." The New England Economic Review, (Jan./Feb.,1984), 39-55.

Myrdal, Gunnar. Economic Theory and Underdeveloped Regions. London: Gerald Duckworth and Co. Ltd., 1957.

Naylor, Tom. The History of Canadian Business 1867-1914: The Banks and Finance Capital, Toronto, 1978.

New England Board of Higher Education. Facts About New England Colleges, Universities, and Institutes: Supplementary Higher Education Data. Boston: New England Board of Higher Education, Nov. 1986.

The New England Council, Inc. New England Adapting to Change: A Comparative Strategy. Boston: New England Council Inc., 1985.

The New England Council, Inc. A Strategy For Leadership. Boston: New England Council Inc., Nov. 1983.

The New England Economic Project. New England Outlook. 1985.

North, Douglas, "Location Theory and Regional Economic Growth", Journal of Political Economy June, 1955.

Okrent, Daniel. Boom!, New England Monthly, (Feb., 1987).

O'Neill, Tim. "Canadian Initiatives Aimed at Maintaining Community Economic Viability/Vitality." Address to the Four Nations Conference, Aberdeen, 1984.

Osberg, Lars. "Beyond Button Pushing." Policy Options, (March, 1987).

Perroux, Francois. "Economic Space:Theory and Applications." Quarterly Journal of Economics, February, 1950.

Ries, J.C. "Unemployment in 1982: Beyond the Official Labour Force Statistics." New England Economic Review, (May/June, 1984), 29-37.

Rima, Ingrid. Development of Economic Analysis. Georgetown, Ontario: Irwin Dorsey Limited, 1978.

Roberts, Edward. "A Basic Study of Innovators: How to Keep and Capitalize on Their Talents." Research Management, Vol. 11, No. 4 (1968).

Roebuck, Laura. "Atlantic Canada and New England: A Rose Through World-coloured Glasses." Atlantic Business, 1987.

Rostow, Walt. The Stages of Economic Growth: A Non-Communist Manifesto. Cambridge University Press, 1961.

Sacouman, James "The Peripheral Maritimes and Canada-wide Marxist Political Economy." Studies in Political Economy, (Autumn, 1981).

Schmenner, R.W. "Look Beyond the Obvious in Plant Location." Harvard Business Review, (Jan., 1979), 126-32.

Schumacher, E.F. Small is Beautiful: A Study of Economics as if People Mattered. New York: Harper and Row, 1975.

Schumpeter, J.A. Capitalism, Socialism and Democracy, London: Unwin University Books, 1943.

Schumperer, J.A. The Theory of Economic Development, Harvard, Cambridge, 1949.

Seymour, C.R. and W.E. Wetz. "An Economic Strategy for New England: The Role of Informal Equity Capital." The New England Journal of Business and Economics, (Spring, 1980), 1-12.

Shipman, William D. ed. Trade and Investment Across the Northeast Boundary: Quebec, the Atlantic Provinces and New England, Montreal: The Institute For Research On Public Policy, 1986.

Sinclair, A.M. "Problems of Underdevelopment in Atlantic Canada: With Special Reference to Nova Scotia." Symposium on Problems of Development in Atlantic Canada, The Royal Society of Canada, April, 1975.

Smith, W.J. "Recognition of Regional Balance." Policy Options, Vol.2, No.50 (1981).

Sweeney, Gerry ed. Innovation Policies: An International Perspective, London: Frances Pinter Publishers Ltd., 1985.

Syron, Richard F. "The New England Experiment in Interstate Banking." The New England Economic Review, (Mar./Apr. 1984).

Tannenwald, Robert. "Rating Massachusetts' Tax Competitiveness." New England Economic Review, (Nov./Dec. 1987).

Tannenwald, Robert. "Why Has The Unemployment Rate Declined So Rapidly." New England Economic Review, (Sept./Oct., 1984). 34-38.

Thomas, G.M. "Expansion of North-South Trade Relations Between The New England States and Eastern Canadian Provinces." International Transportation and Trade Workshop on Inter-Regional Transportation and Trade Between Eastern Canadian Provinces and New England States, May 9, 1974.

University of Waterloo. Co-op Employees Handbook. University of Waterloo, Department of Co-ordination and Placement, Sept., 1983.

Veltmeyer, Henry. "A Central Issue in Dependency Theory." Canadian Review of Sociology and Anthropology, Vol.17, No.3 (1980).

Waldman, M.J., and R.A. Cohn. Business Investment In The United States: A Guide to Federal and State Incentive Programs, Laws, and Restrictions, Washington: The Bureau of National Affairs, 1984.

Watkins, Mel. "A Staple Theory of Economic Growth." Canadian Journal of Economics and Political Science, Vol.29, No.2 (1963), 141-158.

Weaver, Clyde, and Thomas Gunton "From Drought Assistance to Mega-Projects: Fifty years of Regional Theory and Policy in Canada." Canadian Journal of Regional Science, Vol.5, No.1 (1982).

GOVERNMENT

Canada. Economic Council of Canada. Living Together: A Study of Regional Disparities. Ottawa: Department of Supply and Services, 1978.

Canada. Economic Council of Canada. Fifth Annual Review: The Challenge of Growth and Change. Ottawa: Department of Supply and Services, 1968.

Canada. External Affairs. United States (New England): A Guide for Canadian Exporters. Ottawa: External Affairs Canada, 1987.

Canada. Statistics Canada. Regional Research and Development Expenditures. Cat. No. 88-203, Ottawa: Statistics Canada, 1986.

Canada. The White Paper on Employment and Incomes. Ottawa: Kings Printer, 1945.

Canada. Department of Regional Industrial Expansion. "New England and Atlantic Canada: A Comparative Study." Halifax: APEC. 1985.

Connecticut. Connecticut Dept. of Economic Development. Connecticut Market Data 1983. Hartford: Connecticut Dept. of Economic Development, 1983.

Halifax-Dartmouth Port Development Commission, Profile of A Halifax-New England Feeder Service. Halifax: Halifax-Dartmouth Port Commission, January, 1985.

Gibney, F. J. Monograph of the Commonwealth of Massachusetts. Massachusetts Dept. of Commerce, Sept., 1984.

Maine. Maine: A Statistical Summary. Maine State Development Office, 1984.

Nova Scotia, Venture Corporations Act: A Guide for Business Investors, Halifax: Nova Scotia Department of Development, 1985.

Rhode Island Strategic Development Commission. The Greenhouse Compact: Executive Summary. Providence: Rhode Island Strategic Development Commission, 1983.

United States. Dept. of Commerce. Statistical Abstract of the United States 1987, Washington: U.S. Dept. of Commerce, 1987.

United States. Dept. of Commerce. Survey of Current Business June, Washington: U.S. Dept. of Commerce, 1985.

INTERVIEWS

The following contacts were useful in confirming certain impressions left by the literature review. Specific references are made to some of these in the footnotes to each chapter.

1 Christopher Anderson
Massachusetts High technology Council
Boston, Ma.

2 Wayne Ayers
Vice-President, Bank of Boston
Boston, Ma.

3 Mark Baribeau
Economist, New England Council Inc.
Boston, Ma.

4 Lynn E. Brown
Vice President-Economist
Federal Reserve Bank of Boston
Boston Ma.

5 Ronald F. Ferguson
Professor, John F. Kennedy School of Government
Harvard University
Cambridge, Ma.

6 Robert LaRocque
Banker, Toronto Dominion Bank
Houston Texas

7 Marg Lloyd
N.S. Dept. of Development
Halifax, N.S.

8 Steve MacDonald
Professor, Henson College, Dalhousie University
Halifax, N.S.

9 Gail Merseth
President and CEO, New England Council Inc.
Boston Ma.

10 Patricia O'Brian
Dukakis For President Office
Boston Ma.

11 David Ryan
Acting Counsul General
Canadian Consulate General
Boston, Ma.

12 Richard W. Vinson
Commercial Representative
United States Cousulate General
Halifax, N.S.